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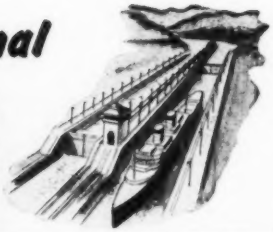

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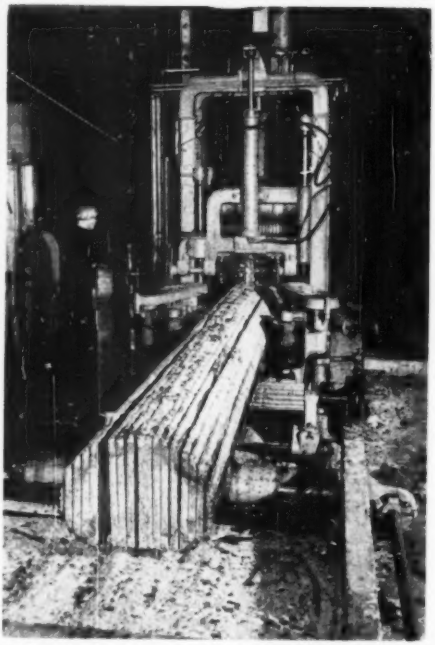

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Contents

Editorial: Perspective—Does it Dim with Age? 866
Raphael Zon

Third World Forestry Congress 868
Tom Gill

United Nations Scientific Conference on the Conservation and Utilization of Resources 873
S. B. Show

International Technical Conference on the Protection of Nature 875
Fred Mallery Packard

Snohomish Forestry 877
T. B. Plair

Recent Advances in Forest Game Management 882
Warren W. Chase

Forest-Wildlife Ideologies 886
C. R. Gutermuth

Industry Needs More Forest Economists —Now! 890
Robert H. Van Voorhis

Gum Flow from Turpentine Pines Inoculated with the Pitch-Canker Fusarium 894
R. P. True and Albert G. Snow, Jr.

Grade Labeling Tree Vigor in Forest Management 900
C. B. Stott

Grafting Methods Used in Studies of the Littleleaf Disease of Shortleaf Pine 904
L. W. R. Jackson and Bratislav Zak

The Effects of Deer on Conifer Reproduction in Northwestern Montana 909
Lowell Adams

Notes 914
Points of View 916
We Present 920
Reviews 922
Current Literature 929
Society Affairs 931
Forestry News 941

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Journal of Forestry

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Editorial

Perspective—Does it Dim With Age?

THERE is a popular notion that as man's perspective grows shorter and his retrospection casts longer and longer shadows, his thoughts turn more to the contemplation of the past, his interest in every day's problems diminishes, and his entire outlook upon life becomes narrow and often cynical. Even if there be some psychological basis for such an assumption, of which I am not certain, it cannot be claimed to be a general rule.

Gifford Pinchot—at 81—was in spirit the "youngest" man in the profession, and there are others. As a matter of fact under normal conditions, ideals implanted deeply in one's soul, ideals not merely professed but actually lived, should become more real and stronger with advancing age. Released from the compromises which life often imposes upon man's actions during his early struggles for recognition and economic advancement, these ideals can now take a fuller sway over his thoughts and actions. Many world leaders have attained the height of their spiritual greatness only after they reached an advanced age. However, this is not De Senectude discourse or how to grow old gracefully. If there is any justification at all for writing this, it is to satisfy the curiosity of some friends who ask occasionally, "How does one, who spent practically fifty years in thinking and working in forestry, view the forest scene now after he had passed the 75-year mark?" Frankly, I do not find any essential difference in my views, except possibly that they became tempered by greater tolerance to the views of others, by not raising hopes too high, and by exercising more patience when progress is slow. On the whole, I find much support for my views by past performance and the outlook for the future.

Measured by every standard, forestry in this country during the past fifty years made rapid and substantial progress. Few foresters of the present generation can realize the difficulties, the ridicule, the scepticism with which the most elementary proposals of the early foresters were greeted. Today the essentials of forestry, for the most part, are taken for granted as self-evident truths, but, like everything in life that is obtained without fighting for it, the present generation may somewhat lack the emotional fervor and the crusading spirit of the earlier days. Possibly these attributes are no longer essential. With the foundations solidly built and the organizations in a fairly smooth running order, the task today is to enlarge by persistent effort the gains already made and make the most of the ample opportunities already at hand. It may sound trite to say that the first fifty years were the hardest, nevertheless it is true.

More than forest propaganda and agitation, the inexorable facts of life are advancing forestry everywhere. A famous historian once remarked that history is relentless in its march. Those who understand the trends of history accept its dictums and go along voluntarily; those who resist are being dragged along by the force of events. This is what is happening everywhere in the world. The war and its consequences—overcutting, forest disorganization, and actual destruction of vast acreages of forest; the awakened masses of many backward countries striving for a higher standard of living; the rapid growth of world's population; industrialization of many countries heretofore agricultural in character; the growing industrial demand for the products of the forest; remarkable advances in the chemistry of cellulose—all these and many other facts brought the whole problem of natural resources as the basis of modern civilization in sharper focus than ever before. New forces are arising, outside the framework of the old organizations, which are pushing the work on many fronts.

The United Nations Food and Agricultural Organization with its ramifications over the

greater part of the world gathers information on the extent of the natural resources and the need for them. In the course of one year there were many significant gatherings here and abroad to discuss fundamental conservation problems: the National Emergency Conference on Resources, the Latin-American Conference on Forestry and Forest Products, the Third World Forestry Congress in Finland, the U.N. Scientific Conference on the Conservation and Utilization of Resources, and some others.

Secretary Krug stated squarely the problem at the opening session of the recent Scientific Conference at Lake Success, "At this very hour about half of the people on the earth are face-to-face with want." This basic problem can be met only through the development of the natural resources in the still undeveloped countries, and while this process is going on, which may take many years, through the creation of reserves, of food and of other essential products that are to be equitably distributed among the countries that lack them. A number of our foresters are now scattered to many corners of the earth as advisers; while advising they undoubtedly also observe and learn. When they return they should bring with them a stronger realistic conviction, born of experience, of the need of safeguarding our own resources.

The recent debates between those who fear the doom of our civilization due to the too rapid growth of the world's population and consequent exhaustion of the world's resources—the old Malthusian theory—and those who believe that the great potentialities of the world's resources were barely touched, that science and new techniques open constantly ever widening horizons in their use, and that man eventually will become the full master of his environment, are clear indications of the real concern and awareness of scientists and other thinking people of the dependence of the future of mankind upon the preservation of the natural resources. And where anxiety and concern exist, a solution is bound to be found.

The time of unlimited supply of timber of desirable species had passed. No country can depend any longer on large imports of timber from other countries when its own supplies begin to run short. Timber, particularly softwoods, is in short supply all over the world. Nations which not long ago were large exporters of timber have now become importers. Even the Soviet Union which for a long time was one of the largest timber exporters, in the past few years under the pressure of rapid industrial development at home must import some forest products to meet its growing domestic needs. Each country from now on will be forced more and more to depend on the full use of its native supplies, considered not long ago of inferior quality.

In my own life time I observed a region, the Lake States, which a quarter-century ago was considered "doomed" as a timber producing region because its valuable white and red pines were largely gone; today it is supporting a growing pulp and paper industry having a larger capital investment and a longer payroll than the sawmills of the booming days of the lumber industry. The base of this new industry is the lowly jack pine and the humble aspen which a couple of decades ago were considered almost worthless.

As countries become more industrialized the demand for forest products is growing. There may be periods of slackening wood consumption due to temporary economic factors, but the general trend is to greater use of wood in all forms. And it cannot be otherwise. Organic matter is one of the essential elements of the present industrial era. Chemists succeeded in a large measure to convert one organic substance into another organic substance. But until they succeed in creating organic matter itself from inorganic substances, wood and coal (the latter being also only accumulated organic matter deposited in the bowels of the earth during past geologic epoch) will continue to be the most plentiful, and in the case of forests most easily renewable sources of basic organic matter. In this sense, it may be truly said that the "age of wood" is not behind but still ahead of us.

All this leads me to the conviction that the forces which work for the development, efficient utilization, and preservation of the natural resources are in the long run bound to win over complacency, limited vision, and lack of understanding of the real facts of life. It further encourages me to think that the conditions, as I view them, augur well for even greater progress in forestry in the next fifty years than in the half-century gone by. So what does it matter if the mortal body shows the effects of long wear and tear, and the joints begin to creak, as long as one retains a glimpse of understanding of the world about him, the faith in the future of forestry and all that goes with it remains undimmed? To lose this faith is to lose faith in the progress of mankind itself.

RAPHAEL ZON.

Third World Forestry Congress

Tom Gill

Secretary, Charles Lathrop Pack Forestry Foundation, Washington, D. C.; Chairman, Committee on International Relations, Society of American Foresters.

In 1936 Finland had offered to be host to the Third World Forestry Congress, and the year originally set was 1940. Programs and invitations had already been sent out to the nations when it became necessary to abandon the plan because of world conflict, and in the following year Finland found herself involved in war with Russia.

When peace was restored, it seemed unlikely that Finland would wish to renew her invitation, or be in any position to act as host to a world congress. For the war with Russia had cost her 12 percent of her forest area and 25 percent of her forest industries; Helsinki had been under constant bombardment; and Finland was faced with a terrific reparations burden as well as with the need to provide shelter and housing for the 10 percent of her people whose homes had lain in the ceded territory.

In spite of all these obstacles, however, Finland in 1947 reaffirmed her willingness to be host country to the Third World Forestry Congress, and the date was finally set for July 10-19, 1949. The Food and Agriculture Organization of the United Nations collaborated in planning the congress program and its staff prepared a number of papers, but the actual details and physical arrangements were carried out by the Finnish Organizing Committee.

The congress held in Finland is third in a series of world congresses whose purpose is to gather together experts from all nations to consider problems of forestry and of wood supply and consumption. The first congress had been held in Rome in 1926, and the second in Budapest ten years later. War, and the dislocations that followed war, then prevented any world meeting of foresters for thirteen years, or until the third congress convened in 1949.

Attendance

More than 500 members attended this congress, representing 27 nations, four international organizations, the occupied zones of Germany, and the Supreme Commander for Allied Powers in Japan. Six men from governmental, industrial, and educational agencies had been selected by the State Department to serve as a U. S. delegation, with C. M. Granger, associate chief of the U. S. Forest Service, as chairman. Other members of the delegation were E. C. Crafts, chief, Division of Forest Economics, U. S. Forest Service, Washington, D. C.; George A. Garratt, dean, Yale School of Forestry, New Haven, Conn.; Tom Gill, secretary, Charles Lathrop Pack Forestry Foundation, Washington, D. C.; H. M. Seamar, vice president, Kirby Lumber Company, Houston, Texas; and Corydon Wagner, vice president, St. Paul and Tacoma Lumber Company, Tacoma, Wash.

Four observers from the U. S. Forest Service accompanied the delegation: Leonard I. Barrett, chief, Division of Forest Management Research, Washington, D. C.; Ira J. Mason, chief, Division of Timber Management, Washington, D. C.; I. T. Haig, director, Southeastern Forest Experiment Station, Asheville, N. C.; and J. Herbert Stone, regional forester, Atlanta, Ga.

Among the observers present were W. K. Williams from the U. S. Department of Agriculture's Office of Cooperative Extension Work; Thomas C. Mason from the Lumber and Allied Products Section of the U. S. Department of Commerce; and Mathias Niewenhous from the Lumber Section of the Economic Cooperation Administration. Americans present from Japan were Herbert D. Bruce and Harold B. Donaldson. Joseph C. Kircher and Mrs. Kircher had come up from the American Military Government in Germany.

In addition to the delegation and observers eighteen members and associate members from the United States attended the Congress. These were Joshua A. Cope, Oliver D. Diller, Ellen C. Dowling, Mrs. Tom Gill, Stephen Granger, Mrs. I. T. Haig, I. R. S. Haig II, Nicholas Muhlenberg, Scott Pauley, Mrs. H. M. Seaman, Hardy L. Shirley, and Mrs. Shirley, Clarence W. Stevens and Mrs. Stevens, Joseph H. Stoeckeler and Mrs. Stoeckeler, Mrs. Corydon Wagner, and Russell Watson.

The nations represented were Argentina, Australia, Austria, Belgium, Brazil, Canada, Ceylon, Denmark, United States, Finland, France, India, Indonesia, Israel, Italy, Mexico, Norway, New

Zealand, Pakistan, Netherlands, Poland, United Kingdom, Sweden, Switzerland, Czechoslovakia, Turkey, and the U.S.S.R.

Program

Opening with a first plenary session on July 11 in the Great Hall of the University of Helsinki, the congress was addressed by President Paasikivi of Finland, and the Prime Minister. A message was read from the Secretary-General of the United Nations Organization, Trygvie Lie, and another by Marcel Leloup on behalf of the Director-General of FAO.

At this first plenary session the following officers and the chairmen of the congress were elected:

President, Eino Saari, Finland.
Co-President, C. M. Granger, U.S.A.
Co-President, T. Petrov, U.S.S.R.
Co-President, *honoris causa*, A. Fjelstad, Norway.
Vice President, C. M. Figueiredo, Brazil.
Vice President, A. C. Oudin, France.
Vice President, C. R. Ranganathan, India.
Vice President, Lord Radnor, United Kingdom.
Vice President, G. Strindlund, Sweden.

Chairmen

Section I, L. A. Tortorelli, Argentina.
Section II, F. Papanek, Czechoslovakia.
Section III, G. Giordano, Italy.
Section IV, R. Fromer, Poland.
Section V, H. G. Winkelmann, Switzerland.

Vice Chairmen

Section I, G. Houtzagers, Netherlands, and Viscount C. H. R. Moltke, Denmark.
Section II, T. T. C. Birch, New Zealand, and E. C. Crafts, U.S.A.
Section III, F. Adali, Turkey, and N. Ihlen, Norway.
Section IV, S. A. Vahid, Pakistan, and J. H. Jenkins, Canada.
Section V, C. H. Holmes, Ceylon, and K. T. Streyffert, Sweden.

One action of the congress that received unanimous commendation was the election of Anders Fjelstad of Norway to be co-president *honoris causa*. A veteran of the first, second, and third congresses, Mr. Fjelstad is a leading spirit in international forestry. It was largely due to his efforts that the Division of Forestry and Forest Products is now included in the Food and Agriculture Organization, so it seemed peculiarly fitting that the congress should pay him honor.

A second plenary session held the same afternoon was occupied with the reading and discussion of general papers prepared by the staff of the Division of Forestry and Forest Products of the Food and Agriculture Organization of the United Nations. A third plenary session was convened on the morning of July 12th, and that afternoon the congress meetings were divided into five sections devoted to the following topics:

SECTION I. Silvics and Silviculture

1. Development and silvicultural treatment of virgin forests.
   (a) in the tropics.
   (b) elsewhere.
2. Biology and technique of afforestation.
3. Forest genetics.

SECTION II. Forest Surveys

1. Sampling method and intensity of forestry.
2. Different survey methods of large areas.
   (a) aerial photography.
   (b) other methods.
3. Determining the increment.
4. Coordination of data of large areas.

SECTION III. Forest Economics, Including Forest Policy

1. Economics and policy of exploiting virgin forests.
   (a) in the tropics.
   (b) elsewhere.
2. Economics and policy of afforestation.
3. Relations of forestry to agriculture in rural economy.
4. Measures for safeguarding sustained yield.
5. Employment and unemployment in forestry.

SECTION IV. Forest Utilization

1. Coordination of methods in research on efficiency of labor.
2. Improvement of efficiency in logging.
   (a) in the tropics.
   (b) elsewhere.

SECTION V. Forest Industries

1. Prefabricated wooden houses and their component parts.
2. Waste wood in the forest and industry.
3. Progress in wood chemical industries.
4. Preservation of timber.

Section meetings were held daily from 9 to 4:30 on July 13, 14, 15 (Section I met on July 16), and 18. In addition to the subject-matter sections, a special meeting was held on Saturday morning, July 16, to discuss questions of interest to forestry educators.

A final plenary session of the Congress met on July 19 to consider and adopt recommendations of these sections which were embodied in the *General Report of the Third World Forestry Congress*.

This report affirmed the belief of the congress that each country should have a forest policy aimed at maintaining a reasonable forest area and at conserving and using its forests on a basis of continuous and improved production. It outlined the elements believed essential for an effective forest policy: legislation, research, education, and training of professional personnel.

It commended the work of the Food and Agriculture Organization of the United Nations, and recommended that FAO prepare a statement of forestry principles for the consideration of member nations, that it assist nations now formulating their forest policy, and that the annual conference of FAO explore whatever further steps member governments consider appropriate for the application of the principles necessary for a sound forest policy.

Recognizing the difficulties that are met in translating technical forestry literature, and the consequent hindrance to the dissemination of technical information, the congress also adopted a special recommendation that a multi-lingual dictionary be prepared in English, French, German, Italian, Russian, Spanish, and Swedish. This is to include terms from all branches of forestry. The United Nations, with the help of FAO and the International Union of Forest Research Organizations, were asked to give immediate consideration to this project and to find ways and means for its preparation and publication.

The congress then adopted 29 specific resolutions which are summarized at the end of this article.

In addition to the papers prepared by FAO's staff, nearly one hundred papers were prepared by specialists in their fields and these, read at the section meetings, provided a basis for discussion. All these papers, as well as the minutes, recommendations, and resolutions, will be printed in the official congress documents. Institutions, organizations, and interested persons may purchase these documents by writing to the University Forestry Library, Unioninkatu 40B, Helsinki, Finland.

A number of forestry excursions were made available to the delegates before and after the congress. Immediately preceding the meetings, delegates were offered eleven excursions organized by the Finns, covering forest resources, industries, forestry schools, nurseries, and other aspects of forestry activities. After the congress the Northern Forest Union arranged an excursion into the Scandinavian countries, and excursions through the forests of Germany and France were made available to the American members.

No definite place was set for the next world congress. Argentina has offered to be host, and both Canada and the U.S.A. were prominently mentioned. The date was also left open. The original intention had been to hold a congress every two years but, in a world where so many international meetings are being held, it seemed to many delegates that a two-year interval would be much too short, and the decision will probably be to hold a congress every three or four years. It was also suggested that should FAO decide to hold its own conferences biennially, instead of annually as at present, a year should be chosen for the world forestry congress when no FAO conference is scheduled.

Conclusions

An attempt to evaluate this Third World Forestry Congress and to appraise its place in the conservation picture may be of interest. So far as the organization of the congress was concerned, delegates were unanimous in their admiration for the accomplishments of the Finnish Organizing Committee under the chairmanship of Eino Saari. This committee had labored for over a year making ready for the congress, and the evidence on every hand of thoughtful, meticulous preparation down to the very last detail, the entertainment afforded the congress members, the fact that nothing ever seemed to go wrong in situations where everything could go wrong—all this was the direct result of the care and organizing genius of Prof. Saari and his colleagues.

The American delegates left Finland with the distinct feeling that, in addition to whatever this congress may have been, it was a great personal triumph for Prof. Saari. Two other factors contributed to the success of the congress: the generous cooperation of the Finnish wood industry, and the wholehearted backing of the Finnish government. It is doubtful that any future congress can be as completely successful as the third congress unless it is assured this dual cooperation.

The American delegates, too, left the congress with a profound feeling of respect and admiration, not only for the Finnish foresters, but for the Finnish people themselves. On every hand

one was met with a kindness, courtesy, and helpfulness which will not soon be forgotten.

To appraise in concrete terms the professional value of such a meeting is not so easy, although some of these benefits are immediately apparent. The congress afforded men working in the same and similar fields an opportunity to meet together, and served as a proving ground for the interchange and clash of ideas, with the resultant stimulus and enthusiasm that comes from sharing problems and from testing them in a way that the printed word is at best a cold substitute for.

The excursions, too, gave valuable opportunities to examine the end results of silvicultural practices and to study the techniques and devices pursued for certain ends. The technical papers called forth by the congress will enrich forestry literature and influence future forestry thought and practice; and one very concrete outgrowth was the decision to create a multilingual dictionary of forestry terms—something long needed, especially in the Spanish language for South and Central America.

And in appraising the contributions that this congress and other congresses make to the forestry profession, one has to remember that they serve as milestones by which progress can be gauged, and trends revealed. Against the background of the first and second congresses it was clearly apparent that progress had been made toward certain objectives and had lagged in others. Forest protection, systematic management, reduction of waste, and improvement of utilization had moved out of the sphere of discussion into that of generally accepted truths. Recognition of the role of forests in modern society is no longer confined to a small group of specialists. The contributions forest products make to modern economy are far better understood and appreciated than when the first congress was called in Rome, and there has gradually grown up an acceptance of the principle that the management and conservation of forests and the manufacture and distribution of forest products must be regarded as an inseparable whole.

Conversely, the Third World Forestry Congress gave fresh emphasis to the fact that in many countries there still exists no sound forest policy, and in others the application of forestry principles is defeated by selfish aims and governmental lethargy. Cooperation between industry and the forestry profession still leaves much to be desired, and the world has not yet been freed from the wastage of destructive exploitation.

But in a larger sense, it is doubtful if anyone can fully appraise the benefits that flow from these congresses, because many of these benefits may belong to tomorrow and the day after tomorrow, and may have ramifications far beyond the field of forestry itself. Conceivably, they may be a ponderable factor in that difficult and heartbreaking effort to build greater cooperation and better understanding between the nations.

So far as the forestry profession alone is concerned this Third World Forestry Congress came at a time when all the cooperation, all the stimulus, and all the integration of best minds are needed if forestry is to hold its place as a major form of land use throughout the world.

But neither this nor any future congress can hope to attain its full measure of usefulness until every delegate and every member accepts for his credo this warning of Eino Saari: "A world congress is fruitless if the reports and recommendations prepared remain the knowledge of its participants only and collect dust on library shelves. The Third World Foresty Congress was a forum where a number of the most prominent representatives of forestry and forest technology in the world met together in conference. They reached numerous conclusions which, however, will be of no practical value until they are made known to the governments of every country, their parliaments and all the institutions and persons engaged in the conservation and utilization of forest resources."

Resolutions

A resume of resolutions adopted by the Third World Forestry Congress follows.

That FAO and the International Union of Forest Research Organizations be asked to give special attention to the importance of exact data on the evolution of the biological complex of forest soils and to the desirability of further studies on root physiology and on the effect on the soil of a tree cover of the species most used in afforestation.

That the governments should take steps to facilitate rapid exchange of seed and living plant material in small quantities between state forest services or forest research institutes, and

That governments should study the possibility of exempting such material from customs duty when accompanied by an internationally standardized declaration emanating from the above mentioned services or institutes.

That until further technical progress is made in seed production, the harvest should, where practicable, be derived only from recognized elite stands or trees.

That all countries should review their forest inventory

procedures in order to insure that the potential usefulness of aerial survey methods is being fully realized, and

That research and development of improved methods and equipment for making and interpreting aerial photographs should be energetically pursued, and

That all institutions for higher forestry education should offer courses in photogrammetry to their students where practicable.

That the International Union of Forest Research Organizations be requested to undertake, through its constituent organizations, an investigation of methods of rapidly ascertaining the increment of forests on a regional basis.

That FAO's study of the principles underlying the forest surveys of the various nations be speedily completed.

That FAO enunciate in suitable form the principles and techniques that are shown by the study to merit wide application, and

That member nations cooperate in assisting FAO to complete the study.

That corrective measures should be undertaken wherever necessary [to protect adequate forest cover in the catchment area of streams].

That in considering matters pertaining to forest exploitation both social and economic implications be borne in mind.

That schools be instituted in as many countries as necessary for the specialized training of forest labor.

That a permanent subcommittee of the Standing Advisory Committee for Forestry and Forest Products of FAO, composed of experts from various countries, be established for the purpose of coordinating time studies in forest work and all other methods of study related to the various types of hand tools and mechanical harvesting devices as used in forest operations throughout the world.

That a special international conference of those interested and engaged in tropical forestry be called by FAO as soon as convenient.

That a program of scientific, technical, and economic research on wood should be carried out in all countries by means of close cooperation between the interested parties for the purpose of coordinating forest production and wood-using industries.

That silviculturists should endeavor to increase the quantity and to improve the quality of forest products, according to the needs and trends of industry, on the basis of continuous production, and in conformity with sound silvicultural practice,

That industry should endeavor to utilize forest products in the best way possible taking into consideration the trend towards a decrease in fuel-wood consumption,

That industry should be invited to develop further the utilization of wood from non-coniferous species, wood in small dimensions, and, if possible, bark.

That the integration of the various wood-using industries be encouraged.

That efforts should be made not only to expand outlets for wood waste but also to create new ones in conformity with technical and industrial progress.

That special attention should be given to the grading of lumber in order to insure to each product its appropriate destination.

That scientific research aiming at the utilization of wood waste should be continued and increased from the physical, chemical, mechanical, and biological point of view.

That, in order to attain these aims, the laboratories concerned are invited to coordinate scientific and technical research, and FAO should collect and disseminate information on the results achieved in various countries.

That more extensive use should be made of the woods of broad-leaved species, including tropical woods, for the manufacture of paper pulp, in order to conserve softwoods for other purposes.

That semi-chemical pulping should be encouraged in order to insure an overall conservation of pulpwood resources.

That [pre-fabricated wooden] houses must have more individuality in character.

That the various component parts [of pre-fabricated wooden houses] must be standardized to a high degree.

United Nations Scientific Conference on the Conservation and Utilization of Resources

S. B. Show

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THE United Nations Scientific Conference on Conservation and Utilization of Resources, held at Lake Success, August 17-September 6, brought together people, mostly technical lead- from about fifty countries. In the mornings they met in sections dealing with forests, land, water, wildlife, minerals, and fuel and energy. In the afternoons they met in plenary sessions at which eminent authorities brought together the separate fields of specialization, and spoke of problems and methods of harmonizing and coordinating the use and conservation of the several resources. The sheer magnitude of the undertaking is indicated by the list of 535 authors in the official program, men who spoke with authority and up-to-date knowledge. The papers and the discussions were, almost without exception, excellent.

Back of this conference was a vast amount of work by the Preparatory Committee which had labored for nearly two years. Division of time among sections, subjects in each science to be discussed, countries and authors to be invited to prepare introductory and discussion papers, relation of plenary sessions to the technical section meetings, selection of chairmen and program officers—all were difficult to work out.

The technical meetings could be only 2½ hours long, and it is thus understandable that authors did not have time to present their papers entire. Instead, each was given about ten minutes to highlight and abstract. The U.N. secretariat did a yeoman job of translating and mimeographing all papers in English and French, and these were available to delegates in advance of meetings, so that a basis for discussion was laid. The discussion in sections showed, as much as any one thing, the lively interest in newer techniques on the part of delegates from the underdeveloped countries.

It is planned to print the proceedings in full and in due course the books will be available.

Program

Seven technical section meetings were devoted to forestry and forest products as follows:

Forest Inventories and Air Surveys: 8 papers.

Protection of Forests; Control of Fire, Insects and Disease: 8 papers.

Forest Management and Silvicultural Techniques: 11 papers.

Protective Functions of the Forests: 6 papers.

Administration of Forests; Policy, Law, Organization: 8 papers.

Logging and Sawmill Techniques: 12 papers.

Preservation and Chemical Utilization of Wood: 13 papers.

American foresters gave papers before all sections except that on forest management, and in that section they took part in the discussions.

It will be a matter of proper pride to the profession that foresters were able to make so many solid contributions, worthy to come before such an international gathering. Not that Americans had a monopoly, for papers by able foresters from many other lands showed the great advances achieved. Indeed a great problem for the program planners—and an excellent job they did—was to find room on necessarily crowded programs for nations and authorities which beyond a doubt had something of first-order importance to say.

One constant and insoluble problem for the foresters was how to attend several section meetings at the same time. For foresters took part in sections dealing with land, water, and wildlife as well as in the seven sessions dealing with forests and forest products, and there was much vital interest to foresters in these other sections. Foresters were honored, as well, by appearing in the plenary sessions on "The World Resource Situation—A World Review of Critical Shortages," "Using and Conserving Resources—Soils and Forests," and "Creatable Resources: The Development of New Resources by Applied Technology."

Such widespread participation will be no surprise to American foresters since our Society of American Foresters works on that basis. There simply cannot be too much emphasis on the fact that the several resources are inseparable parts of the whole of conservation, and the conference

by its very structure and content held this concept at every stage.

It was good to find water experts in technical sessions dealing with the protective functions of forests; foresters in water sessions dealing with drainage basin management; foresters in land sessions dealing with land use and soil conservation; foresters in sessions dealing with game management.

Conference Values

The conference ended on a high but sober note, recognizing the great task ahead to apply known techniques, and with a strong implication that further meetings for international consultation will be called in due course. The consensus of opinion surely was that the conference was much worthwhile.

There were no committee reports and no resolutions, a practically unheard of proceeding in international conferences. But this was by deliberate choice, since the occasion was one on which to exchange information.

Certainly, it is true that the content and indeed the emphasis were greatly different from what Gifford Pinchot had in mind over forty years ago, when as H. W. White shows in the September JOURNAL OF FORESTRY (p. 742), he first proposed an international conference dealing with conservation. Then methods of resource conservation and utilization had been worked out in western Europe and in parts of India, but in few other lands. Now many more countries were able to report great and often spectacular progress. But still it was necessary to insist on the as yet unrealized needs for conservation of all natural resources. One net effect is the conclusion that if man will apply what he now knows, he need not continue to waste and destroy the very bases of life, and meet the melancholy fate foreseen by the neo-Malthusians.

From the conference should come several forces for bettering conservation practices.

1. The *Proceedings* will serve as a reference source on effective and up-to-date practices for each particular resource.

2. The methods for harmonization and coordination of uses will be better known.

3. Further exchange of information should be stimulated between nations, institutions, and individuals.

4. The successes attained through vigorous application of new methods should serve to show that even difficult jobs in conservation can be done.

American foresters may find in the *Proceedings* a wholesome re-emphasis on the role of forests and forestry in the whole scheme of conservation, and be able to appraise their own progress against the achievements of other countries.

International Technical Conference on the Protection of Nature

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AN International Technical Conference on the Protection of Nature was held at Lake Success, August 22 to 30, 1949, under the joint sponsorship of Unesco[1] and the International Union for the protection of Nature. The United Nations Scientific Conference on the Conservation and Utilization of Resources (UNSCCUR) was designed to acquaint leaders of industry and government with modern concepts of the wise use of the materials of the earth, as well as to provide a forum for exchange of information. Dr. Julian Huxley, former director-general of Unesco, and others recommended that a companion conference be convened to present the protective aspects of conservation, so that the delegates might obtain a comprehensive view of the entire problem. Accordingly, the sessions of each conference were planned to enable participants to attend both conferences.

More than one hundred papers were submitted to ITCPN, duplicated in advance, and studied in preparation for the meetings. Thus, each meeting could be devoted entirely to discussion of the subjects and achieve maximum results. The first three sessions dealt with education, under the Chairmanship of William Vogt. The need for increased use of mass media, including press, national magazines, and radio, to reach the general public with information now available mainly to technicians, was stressed. Analysis of the variant problems involved in educating people in literate regions and those in areas where illiteracy is a hampering factor led to the conclusion that greatly increased facilities for training teachers and for student use are urgently needed.

Six meetings were devoted to stimulation of international cooperation in ecological research and its application throughout the world. Emphasis was given to the need for caution in planning enterprises for the benefit of human economy lest they inadvertently damage the welfare of the land, especially where major alterations of natural conditions are contemplated, and so do more harm than good. Projects such as the British program for planting peanuts on a large scale in Africa were used as examples. The discussions showed that what may be a sound technique in one country may be catastrophic in another, while in some cases methods tested in one area may be adapted for use elsewhere. The dangers inherent in the uncontrolled use of insecticides or anthrycides, and the introduction of exotic species, were considered, as well as the problems of decreasing populations of the larger mammals in many parts of the world and the many forms of plants and animals now on the verge of extinction. The desirability of additional national parks in frontier regions and of an eventual world convention on the protection of nature, and the value of an international central office for the exchange of information, were also discussed.

[1]United Nations Educational, Scientific and Cultural Organization.

Recommendations

UNSCCUR was a discussion conference, and was not planned to present recommendations or resolutions. The Conference on the Protection of Nature, however, was intended to present definite advice to the United Nations and to the governments of the world about how to coordinate conservation and the preservation of nature with international efforts to provide food, shelter and clothing for humanity. The delegates from 31 nations and dozens of conservation societies urged the specialized agencies of the United Nations, such as the Food and Agriculture Organization and the World Health Organization, to promote study of suitable areas with the viewpoint that such factors as food, water, soil, plants and plant products, wildlife, agriculture, industry, social development, and all phases of human activity are interrelated, and that any program of human ecology must consider all aspects of the processes of nature. Duty-free exchange of documentary material on conservation was recommended, and the fullest possible international cooperation in all matters of con-

servation. Suggestions were presented for controlling the use of DDT and similar chemicals, and to regulate the introduction of exotics. A number of endangered forms of birds and other animals, including the Indian, Javan, and Sumatran rhinoceras, the great sable antelope, the Hawaiian goose, California condor, chinchilla, and many others, were listed and the national governments concerned urged to take immediate steps for their protection.

A similar resolution was passed advocating action to preserve areas supporting vanishing plant species, such as the small strip of native forest remaining on Peliliu; the dry forest of Lanai, in the Hawaiian Islands, with its collection of relict endemic plants; the Desvenduradas Islands and their endemic associations; the high ridges of St. Helena Island; the remaining forests of the Guadeloupe Islands, Mexico; the habitat of *Rafflesia Arnoldi* in Indonesia; and the relict forest of Mt. Gouda in French Somalis. An open list of such rare and threatened plant species with their areas, associations and habitats, will be maintained by the International Union for the Protection of Nature, 42 Rue Montoyer, Brussels, Belgium, to provide information through research to the governments of the world as to what measures are necessary to preserve them.

If these and other recommendations of the conference result in practical action, the progress of conservation and nature preservation will be advanced on a world-wide basis. A long step has been taken, but if it is to be effective, the scientific and cultural organizations of the world must ensure that positive action follows.

The Society of American Foresters can help by supplying the International Union with data on the botanical problems requiring such measures.

Another immediate move recommended by the conference is to ensure that the Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere is properly implemented and that a meeting of the signatory powers is held in the near future. (Senator Gillette's bill, S. 1473, to implement this treaty, is now before the Senate Committee on Interstate and Foreign Commerce.) With the support of all conservation organizations and of the governments of the world, the International Union is in a position to accomplish important results in the critical field of conservation and nature protection.

Snohomish Forestry

T. B. Plair

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FARMERS and millmen have gotten together in Northwest Washington in a most unusual pact for private enterprise concerned with tree growth and sale of forest products. The unique agreement, that has brought together the farmers with tree crops and the industries dependent on them, brings the principle of sustained yield into the foreground in the realm of private operations.

The two cooperating organizations are the Washington Forest Products Cooperative Association, which represents the tree farmers, and the Cascade Forest Industries, Inc., the association of the millmen in Snohomish, Skagit, and Whatcom Counties.

The goal of the two organizations, as set forth in the 35-year contract they have executed, is maximum production and maximum utilization of the farmers' tree crops and the attendant benefits that accrue in a stabilized economy.

Some of the foresters and industry people in this section of the Douglas-fir region believe that this pact will have the same historic significance in the field of private enterprise as the first sustained-yield pact between government and industry, that of the Simpson Logging Company and the U. S. Forest Service.

This development did not occur overnight. It was the culmination of a series of carefully planned and well executed actions, the first of which had started ten years earlier. A lot of the interest that led to this pioneer development stems from a C.C.C. camp that was established in Snohomish County in 1938 and assigned to the Soil Conservation Service to work on private land. The public furnished technical assistance, a small amount of nursery stock, labor, and equipment. The principal assistance to landowners which contributed to the development of this program was given by foresters.

In developing the conservation program for the Snohomish C.C.C. camp, the technicians learned these significant facts. The county had a surface area of 1,327,000 acres, with 85 percent of it forest land. Forty-three percent of the forest land was in private ownership, of which two-thirds was in ownerships of less than 5,000 acres. Farmers owned 188,000 acres of which 55,000 were considered to be woodland. They also had 83,000 acres of cleared land which they were using principally for pasture. Other crops grown were fruits, vegetables, small grains and hay, but dairying and livestock were their main sources of farm income. Soils, rainfall, temperatures and especially topography favored the grass and trees.

The foresters knew that before a very convincing sales argument for woodland management could be presented to a farmer, it would be necessary to know what the markets would take at what price. Therefore, one of their first jobs was to learn who would buy what, when he wanted it, where he would take it, in what quantities, and how much he would pay for it.

Before a pulp buyer would show much interest in giving a firm an order he wanted to know who would deliver how much and when. The millmen and pole buyers wanted to deal with people who could fill their orders at least expense. They would not search for a dozen producers if one could be found who could furnish the supply needed.

There were other things that had to be done. The foresters had no marking rules or guides for cutting or harvesting young Douglas-fir. They knew that virgin stands could not be harvested selectively, but must be clearcut. This procedure is necessary for adequate regeneration, since Douglas-fir is intolerant to shade. Yet most of the young stands were not over fifty years old, and in the majority of stands not all the trees were large enough to be economically mature for most products for which there was a market. So, if there was to be any forestry applied in second-growth stands, it had to be by harvesting commercial products on an individual tree selection basis. These stands were approaching an age when the annual increment in board feet would be near the peak. Under these conditions it was particularly desirable to leave the land adequately stocked with the most desirable trees for future crops.

Since second-growth Douglas-fir occurs in essentially even-aged stands (Fig. 1), it was assumed that the most and best growth would occur in stands of even height, or where each

tree had an equal opportunity to grow. That assumption gave birth to cutting guides, which were developed by M. C. Bonney, Soil Conservation Service project forester, and used in the early days of the program.

These guides appeared to be adequate for the silvical requirements (Fig. 2), but the economics of cutting young growth Douglas-fir on an individual tree selection basis according to any guide still had to be proven. The economic feasibility of these particular guides had to be tested. That could be done only by getting farmers to cut trees which had been marked according to these guides. This was accomplished through the co-op.

FIG. 1.—A well-stocked stand of 50-year old Douglas-fir on Site II. At least 30 percent of the volume could be removed during the initial thinning or intermediate harvest cut, and then a thousand feet cut every year for a lifetime.

FIG. 2.—A second-growth Douglas-fir stand following a piling cut. By cutting these scattered trees many other crop trees are now better spaced for maximum increment. Additional trees could have been cut, if a suitable market had existed for their products.

Co-Op Operations Started

In 1940 the co-op started operations with a large pole contract which it got because co-op members had this crop to sell. This contract permitted members to sell a product they could not have sold individually. At that time the co-op was able to furnish directly assistance in marketing only. Later, as equipment was obtained, some members had the entire harvesting and selling job handled by the co-op. Soon markets were developed for many other forest products, such as sawmill and veneer logs, shakes, pulpwood and fuel wood. This program continued until early 1945 when, due to the war, the directors voted to suspend active assistance to members. During the four-year period the co-op had operated, there were opportunities to test not only the tentative cutting guides, but the economics of partial or intermediate harvest cutting in second-growth.

Table 1 lists by years the number of participating members, acreage owned, volume of products cut, and total value of products handled. Farmers received about 60 percent as much money for the products they sold by making intermediate harvest cuts as they would have received if they individually had sold their entire merchantable trees. On the average, they only sold about 15 percent of the standing trees, which contained about 35 percent of the merchantable volume. Several of the farmers who sold products in 1940 and 1941 have already made other intermediate harvest cuts on the same acres. In fact, some of them have made two subsequent cuts. In each case the annual pro-

TABLE 1.—ACTIVITIES OF WASHINGTON FOREST PRODUCTS COOPERATIVE

	Members		Products sold		
			Sawlogs	Poles and piling	
Year	No.	Acreage	M. bd. ft.	(Lineal ft.)	Value[1]
1940[2]					
1941	62				$35,341.87
1942	67		2,348	24,902	$39,395.60
1943	68				$39,900.64
1944	69		1,328	115,762	$40,079.56
1945[3]	69	6,400	304	5,400	$ 6,682.90
1946[4]					
1947[4]	50	4,750			
1948[5]	105	16,000	431		$14,240.03

[1]Includes receipts from all products sold.
[2]Records combined with 1941 records.
[3]Accomplishments for the first three months while preparing for the war shut down.
[4]Activities suspended.
[5]Accomplishments for approximately three months following resumption of activities.

duction of the woodland is now greater in dollar value than it was prior to the first cut. Based on measurements of a few typical stands, the annual board-foot volume increment is greater than it would have been had the intermediate harvest not been made. Table 2 gives data taken from four stands on which measurements were made at least five years after the initial cut.

Soil Conservation District

In August 1941 the farmers of Snohomish County organized a soil conservation district because they realized the need for working together to do many of the conservation jobs on their lands. They wanted to do the whole job, and not just be concerned with woodlands, or with plowable land. They needed to apply group action to such community activities as riverbank erosion control, drainage, and other conservation jobs where two or more farmers needed to work together. They also knew that some of their pastures needed to be improved, and more particularly they wanted to use their land in a safe manner for continuous production of adapted crops.

Soon after the Snohomish County Soil Conservation District got organized and was getting technical assistance from the Soil Conservation Service, the co-op established a basis for working with the Soil Conservation District. The co-op directors wanted technical assistance in forestry and soils, so that they could be assured of properly helping their members use their forest lands for growing tree crops and in doing the best forestry job possible. The co-op then recommended that the farmer get a conservation farm plan. The idea of tree farming was taking hold very fast.

Tree Farms Started

In September 1943 the West Coast Lumbermen's Association certified 17 farmer-tree farms in Snohomish County as members of the American Tree Farm System. Each farmer owner to whom Col. William B. Greeley awarded a certificate was a cooperator with the Snohomish Soil Conservation District and a member of the co-op. Since that time several other co-op and district cooperators have been accredited as tree farmers.

The farmers in adjoining Skagit County, after hearing about the things happening in Snohomish County, organized a soil conservation district in September 1942. At first most of them were primarily interested in improving their use of their cultivated lands with special attention focused on drainage involving tide water con-

TABLE 2.—CASE HISTORIES OF FOUR STANDS ON WHICH INTERMEDIATE HARVESTING OF SECOND-GROWTH DOUGLAS-FIR WAS MADE

Plot No.	Site index	Cutting age	Present age	Growth period	Description	Stand condition			
						Original	Removed	Residual	Present
3	120	54	61	7	(1) Cubic feet volume, total	4,920	1,178	3,742	4,363
					(2) Board feet volume, Scribner	7,166	3,345	3,821	6,720
					(3) Board feet volume, International	28,189	7,229	20,960	25,317
					(4) Basal area square feet, total	137.9	32.1	105.8	122.0
					(5) Number trees, total	267	38	229	229
					(6) D.b.h. inches, average	9.74	12.40	9.20	9.89
4	130	75	79	4	(1) Cubic feet volume, total	7,295	1,496	5,799	6,384
					(2) Board feet volume, Scribner	21,256	6,967	14,289	17,087
					(3) Board feet volume, International	45,306	10,408	34,898	39,647
					(4) Basal area square feet, total	179.5	33.8	145.7	158.4
					(5) Number trees, total	262	23	239	239
					(6) D.b.h. inches, average	11.20	16.40	10.57	11.02
17	130	48	55	7	(1) Cubic feet volume, total	7,819	622	7,197	7,973
					(2) Board feet volume, Scribner	18,795	618	18,177	22,339
					(3) Board feet volume, International	50,597	3,909	46,688	52,708
					(4) Basal area square feet, total	183.6	15.5	173.1	190.0
					(5) Number trees, total	300	33	267	267
					(6) D.b.h. inches, average	10.70	9.30	10.90	11.40
7	130	65	70	5	(1) Cubic feet volume, total	9,489	1,639	7,850	8,839
					(2) Board feet volume, Scribner	45,483	8,773	36,710	42,895
					(3) Board feet volume, International	68,622	12,278	56,344	62,741
					(4) Basal area square feet, total	194.1	33.2	160.9	179.9
					(5) Number trees, total	132	13	119	119
					(6) D.b.h. inches, average	16.48	21.60	15.74	17.56

trol. A few of them were interested in their tree crops. As a result of the accomplishments of these few who were working with the Soil Conservation Service forester and his co-workers, others soon became interested. By 1947 this number had materially increased as a direct result of an intensive program of telling the farmers what they could do with their tree crop,[1] showing them how to do it, and working with them to get them started doing the job correctly.

Sustained-Yield Contract

At the February 1948 annual meeting of the co-op they signed a 35-year contract with the Cascade Forest Industries, Inc. This is a co-operative sustained-yield agreement, conceived, developed, and executed by private individuals through private organizations. The co-op agrees to sell its member's wood products to the Cascade Forest Industries at prices established quarterly. Other items of interest to both groups are clearly set forth in the agreement so each will know what to expect and what is expected of him.

These two actions were important steps towards an assurance of continuity of applied management on small forest properties of northwestern Washington. A secure market and professional guidance for a variety of jobs has established the degree of confidence and insurance necessary to sustained-yield forestry.

With the industries and the co-op working together, the woodlot owner's interest and activities have been greatly increased. The co-op membership jumped from 50 to 105, representing an acreage increase from 4,750 to 16,000. The volume of business during the last three months of 1948 shows that the co-op is definitely back in business, but not as usual. Now the co-op has facilities for doing many things to help all its members. In addition to marketing assistance, members can now get assistance in harvesting, custom sawing, or hauling their crop to market—essentially complete forest cropping services. The nonresident woodland owner of northwestern Washington may get the co-op to do his farm forestry for him. Even so, at least 75 percent of the farmers do their own woods work.

The record for the Snohomish and Skagit Soil Conservation Districts also proves that farm forestry is increasing. Farmers have applied management practices to about 10,500 acres of their forest land during the past six years, and have management plans for approximately 34,000 acres. The money farmers have received from their tree crops has been a sufficient incentive for them to start on a continuous tree cropping program. This fact is further illustrated by the volume of repeat business for the co-op and the number of farmers who have made more than one intermediate harvest cut from their woodlands. In addition to those things, some farmers have bought additional forest land and are now managing it for the continuous production of a wood crop. This is a striking change in attitude from thinking of trees as weeds.

These forestry activities in Skagit and Snohomish Counties have stimulated the thinking of many people outside the immediate area. Many foresters have gone there to see what was done and learn how it was accomplished. These farm woodlands have also furnished suitable areas for research in applied forest management. The School of Forestry, University of Washington, has established a series of study plots so that foresters might soon know what effects intermediate cuttings in second-growth Douglas-fir have on the residual stands. They have also taken students there to observe the farmers' work. The Pacific Northwest Forest and Range Experiment Station has made observations and studied within the area and has cooperated in the establishment of study plots. The local foresters, both public and private, are constantly on the alert to make use of facts developed.

The earlier cutting guides were modified, refined and published in 1948[2] by William Tinney, as "Marking Rules for Initial Thinning in Stands of Even-Age Douglas-fir Ranging from 40 to 80 Years of Age." These rules are being used quite successfully.

A more Trees for Washington program was inaugurated in December 1948 under the sponsorship of the Washington State Forestry Conference. This area will serve as a training ground for many private and public foresters who will cooperate in helping to do the More Trees job.

The contributions of the private timber industry have been of considerable value to forestry activities in northwestern Washington. The moral support provided through public en-

[1] W. A. Tinney and Anton Harmes, 1947. Group action in operation. Soil Conservation Service, Portland, Ore.

[2] Tinney and Malmberg, 1948. Tree management and working rules, second-growth Douglas-fir, Sedro Wooley, Washington. University of Washington, College of Forestry. 34 pp. Illus.

dorsement by their foresters and tree farm certificates awarded by their forest practices committee has meant much to the landowners and to the local forestry technicians. It would be as difficult to evaluate their contributions as it would those of the local farmer supervisors of the two soil conservation districts. Not only have the district supervisors made available technical personnel with whom resident landowners could work, but, through the soil conservation district and the co-op, nonresident owners are provided a means of getting direct assistance in the management of their timberland and marketing its crop.

Summary

Forestry in Snohomish County Washington differs from forestry in other localities only in the way people think and act about it. In a brief span of ten years this is what was accomplished:

1. Farm forestry was introduced in Snohomish County, Washington, in 1938 with the establishment of a C.C.C. camp under the direction of the Soil Conservation Service.

2. Work on the farm woodland was started by a mere handful of technicians and farmers in this area, where cropping the woodland was as foreign to the farmers thinking as was using the second-growth trees for any merchantable products.

3. Markets for most of the products of young stands were either unknown or nonexistent. A sufficient demand for these products was created through development and discovery of markets by the foresters to make it profitable for a land owner to make an initial thinning or an intermediate harvest cut.

4. Marking rules or guides for second-growth Douglas-fir had not been established. Adequate guides were developed by M. C. Bonney and later revised in more specific terms by W. A. Tinney.

5. There was no way in which all farmers could take advantage of existing markets at little cost to them. That was corrected in 1940 by the organization of the Washington Forest Products Cooperative Association. This co-op was started, it has functioned to date, and plans are to continue it without the use of any public funds.

6. In 1941 the Snohomish County Soil Conservation District was organized so that all farmers might get some guidance in planning for the use of, and in the application of practices to their land. Skagit County followed suit in 1942.

7. In 1947 the co-op was reactivated, after two years of inactivity caused by the war; its forestry services increased and its territory extended to include all of Northwest Washington.

8. Early in 1948 a group of mill owners, newly organized as Cascade Forest Industries Incorporated, executed a 35-year contract with the co-op by which they will purchase all the woods products of co-op members at prices set quarterly. This is perhaps America's first large scale truly cooperative sustained-yield agreement established wholly by private industry.

9. The effects of these developments during the past decade on the lives of men and trees of Snohomish County can be seen in the woods and by talking to the farmers who are doing the work. Seventy-five percent of it is done by the farmers.

10. Douglas-fir second-growth stands in Snohomish have been thinned three times using the tree marking guides developed there. Indications are that Douglas-fir may be carried through many short cutting cycles during the rotation.

Recent Advances in Forest Game Management[1]

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IN PRESENTING some of the significant changes that are taking place in forest game management, I am not endeavoring to list in detail and quote research findings. They are and will continue to be available in the literature, and I am referring to only a few of the very latest. Some of the most noteworthy advances are being accomplished upon the land without benefit of much recent research. They result from changes in policy and attitudes.

The Situation Today

The workers in forest game management are well aware of the fact that the termination of many forest conservation programs during World War II caused a recession in the excellent work carried on prior to 1942. Research as well as development was almost stopped. The efforts of both the Forest Service and the Fish and Wildlife Service were curtailed. Neither has had the opportunity to revive important programs on wildlife of forests and woodlands. State conservation departments, universities, and colleges lost trained men and had funds reduced. In most cases it has taken three years to revive some of the programs. Forest wildlife problems, unless desperately urgent, are given a secondary place. This is not illogical, however, as the problems of food and agriculture have been more pressing. Forest areas are often far from population centers and take care of themselves and their animal life without intensive management.

Partly because of the war, however, there has been an increase in many big game animals such as antelope, elk, and deer. Ruffed grouse, although in the low of their cycle, have much improved habitat due to forest tree cutting operations and fire protection. Pulp and fiber producing forests made up of fast growing tree species are beneficial to browsing and budding game, and many small openings in the forest maintain the lower stages in plant succession. Some other improvements have come about due to better farm woodland management, improved watershed control, abandonment of poor agricultural lands to brush and forest growth, and consolidation of much of these into public or estate ownership with consequent management improvements increasing forest cover. It is evident that the two major problems of forest wildlife management are controlling animal numbers and administering lands.

Attitudes of Forest Managers

For several reasons forest managers have developed broader mental horizons during the past few years. This is favorable to forest wildlife and is the result partly of education during the past generation. There used to be many conflicts between the wildlife and timber management technicians. Timber production came first and still does in most forest units. The handling of animals in the forest is now considered a definite part of multiple use and is given a priority in accordance with the values and services it performs. The timber producer often needs the help of the wild animal handler and together they do a better job of managing private as well as public resources. This change of attitude constitutes a definite advance and will be improved now that a common base for cooperation has been obtained. It is my firm belief that the basis of this brotherhood is the *ecological outlook that has been developing in the consciences of both groups.*

This outlook, as a great coordinator, started to grow more than twenty years ago but fruited much later because of the vicissitudes of the great depression (*5*). Examples of this "conscientiousness" are evident in papers given in the past few years by the chief of the Forest Service (*15*), by Leopold (*8*), and in articles in the JOURNAL OF FORESTRY by many prominent foresters.

Further examples of teamwork due to changed mental horizons are evident in the cooperation shown between the state wildlife and federal forest workers. The problem of control of state wildlife on federal lands has been harmoniously worked out by Mitchell and Lauckhart (*11*) for the State of Washington on management of the Yakima Rocky Mountain elk herd. They combined forces to reduce conflicts between sportsman and rancher, the state as owner of game and the federal government as manager of land. After agreeing to work together with less criti-

[1]Presented at the 14th North American Wildlife Conference, Washington, D. C., March 7-9, 1949.

cism of each other as agencies, these two representatives prepared a plan that was accepted on a trial basis. After stockmen and sportsmen understood the benefits to each the plan was adopted and the problem solved with a greater increase in the harvest of elk balancing carrying capacity with game density for the benefit of all.

The Virginia Commission of Game and Inland Fisheries and the Forest Service have a working relationship for federal forest lands that is considered a model for action and cooperation (*3*). All game species in the forest have increased and the best possible habitat for game is developed to fit with good silviculture. In these cooperative ventures each silvicultural operation is studied in the light of its effect upon wildlife. Is not this a great advance from the bitter words over forest game regulation proposed by the federal agency a few years ago? This type of coordination cannot be bought—it results from an understanding of the ecological basis of management.

We can also draw encouragement for continued and improved forest-wildlife management from the recent request by the Canadian Society of Forest Engineers that wildlife training be extended to all forestry students so that rangers and field personnel of the future will be prepared to make proper appraisals of wildlife conditions in their forest areas. Wildlife training of a limited nature is now available to foresters in many of the forestry schools in the United States.

Progress on Hoofed Mammal Management

Recent developments on hoofed mammals inhabiting forests were reviewed by Taylor (*14*) in his paper "Some New Techniques—Hoofed Mammals." Leopold, Sowls, and Spencer (*9*) have surveyed literature on overpopulated deer ranges in the United States. The problem of the white-tailed deer in Wisconsin and Michigan is only slightly closer to solution than it was during the war. There are signs that the educational method is working and that sportsmen, resort owners, and the general public are now beginning to think in terms of hunting antlerless deer. The significant damage to forest reproduction has helped prove the desirablity of hunting does. The rapid spread of deer into agricultural areas is also a potent factor.

Wisconsin's approval to reduce the deer herd by hunting all classes of deer in 1948 was nullified at the last minute by the Governor's veto. Michigan continues to fight for authority to manage the deer herd and is making definite progress. One of the stumbling blocks has been the inaccurate determination of deer populations. Census methods accurate enough to deserve the confidence of wildlife managers are very slowly being developed. At present research workers at the University of Michigan are comparing several ground and aerial methods on the George Reserve. All results so far indicate that commonly used methods based upon indices or samples are very inaccurate. Until we can prove that census methods are accurate, we will not induce the public to allow us to manage the game resource.

According to a recent report by the Wildlife Management Institute, Ohio is managing its own deer herd without making the mistakes of "selling" sentimentalism. A few years ago when the herd was small only bucks were harvested. During the past two years both bucks and does have been killed, and the foundation is being laid for managing the increasing herd to assure the best possible use of the resource. Other areas having new deer herds will do well to watch the results of the intensive program of deer management in Ohio. Several of the western states are trying new "area" management by valleys or watersheds under special permits. Idaho is enclosing a specially selected forested area with deer proof fence for testing all known methods of deer management.

Aerial Methods

The airplane was first used in wildlife work as an aid to counting big game. It has been very useful for predator and hunter controls. DDT is now commonly used for reducing forest insects and aerial methods of spraying have become accepted. Photogrammetry applications to forest land management open up new possibilities for obtaining more detailed information at less cost of labor and funds. Leedy (*7*) gives an excellent review of methods and their application to wildlife management. He suggests "the use of aerial photographs as maps; as aids in evaluating and determining the extent of game range; in censusing such animals as big game species, muskrats, seals, and waterfowl; in locating refuge sites; in law enforcement; in determining hunting pressure; in studying areas damaged by fire, floods, insects, or disease; in locating, mapping, and planning potential dam sites; in preparing soil erosion maps and spot-

ting land-use and wildlife problem areas, in determining changes in vegetative cover and land-use over a period of years; in planning the location of roads, trails, fire lanes, fire towers, and other developmental features of newly acquired areas; in making special studies of rare or vanishing species. . . ." Riordan (*12*) last year reported on methods of sexing big game by airplane. The use of aerial photographs with stereobinoculars to determine accuracy of present census methods has great promise. Short cuts and less expensive methods of population determination are sure to result. Current studies indicate that counting animals from airplanes in relatively open forested country are not as accurate as usually considered. New types of film should give us much more latitude, perhaps even recording heat radiation from the larger animals. Color films are making it possible to record other facts beyond the power of human sight.

Cover Mapping and Environmental Analysis

Even though new aerial methods give us a new and spectacular tool destined to help in many ways, there are details needed in environmental study that must be done on the ground. In considering the amount of time that has been devoted to cover mapping I sometimes think we are in the cover mapping stage of forest wildlife management. We haven't moved ahead very fast on this, but still some new contributions are evident. Arnold (*1*) and Webb (*16*) in the forest areas of the Northeast are independently setting forth details of the environment in graphic form so that plant distribution and abundance may be easily related to the animal population. Environmental analysis is dependent upon careful type mapping of both forest type and understory, but reveals the details of food and cover distribution and the relations of other factors.

I realize that numerous other detailed environmental surveys are in progress and that whole states are being examined under the Pittman-Robertson program. I have recently learned through correspondence of some of the refinements being tried in West Virginia. Some excellent new method should be in the literature as a result of this work. Webb says that "When such data are available for an area, the selection of the proper management practice can be made on the basis of actual knowledge of what environmental requisite is lacking in the area." It is evident that we are now almost ready to apply statistical methods to wildlife problems as the mensurationist does to the stand of timber. Our problem, however, is much more complex. Perhaps we are at a point in mapping, analysis, and classification where more teamwork in adjacent states could simplify and improve standards. I propose that this be done in the Northeast, where forest wildlife conditions and problems are similar and where some of the most vigorous mappers and analyzers are located.

Control Methods

But why spend so much effort on environmental studies when chemical controls may be applied that will nullify the benefits to wild animal life? Fortunately, the ecological point of view became widespread before DDT, 1080, and 2, 4-D were known. Balanced outlook and research have prevented these chemicals from doing tremendous damage to forest game and fish and their environments. Recent results have been currently presented and are available to everyone. Linduska and Surber (*10*), Kalmbach and Linduska (*6*), and many others have given excellent summaries and evaluations. Prompt and thorough investigation and the publication of results in clear-cut and practical recommendations represent the real recent advances.

Other Advances

No forest game bird has received as much attention during the past three years as the king of game birds—the ruffed grouse. More than ten years of research and hundreds of reports have been brought between the covers of two books. Edminster (*4*) and Bump and associates (*2*) have given us the information and techniques for managing this bird in the eastern United States. I wonder what is being done in the forests of New York State to use the recommendations so well analyzed and so ably presented.

One of the encouraging things in recent literature is the number of publications on wild turkey management. For a bird that was so near extinction in most forested areas, it has made a phenomenal comeback. Practical methods of improving its environment are now known. Most of these so far are protection measures such as protection from recreation and disturbance, hogs and cattle, logging, poaching, and fires. Other practices being developed to assist this most famous of forest game birds are trapping and transplanting, measurement of mast yields, and

size and locations of sanctuaries. I think the increase in turkey flocks in many states is an indication that forest managers are doing a splendid job.

Certain other advances make the picture still more encouraging: the research possibilities of the expanded Pittman-Robertson programs; the reorganization and strengthening of the Wildlife Management Institute with its stimulation and generous grants; the new literature in the form of monographs of species, textbooks, and teaching aids; organization of new and stronger departments in research and teaching institutions; and finally, a more complete understanding of some of the limitations of forest game management. The U. S. Forest Service in its new Region 5 *Wildlife Management Handbook* (*13*) sums up the problem thus: "Although our balance sheet on forest-game is in the red with fewer species to take, more restrictions, some reductions in numbers, and incidental management still the rule, we have made progress in setting standards of quality, understanding the relationships of plant succession to management, and obtaining a more helpful attitude toward wildlife by forest land managers."

We still need to use the excess wildlife that is available for harvest. This lack is the greatest weakness in recent management. We need some additions to present national forest and park areas to include range for year-long feed for big game. Private forest lands amounting to more than 400 million acres should be managed to produce their share of game. Increased attention should be given to wilderness areas and endangered species of forest wildlife having unusual qualities for sport, aesthetics, and recreation. Finally we must intensively manage public forest areas on a multiple use basis with wildlife receiving high priority.

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Forest-Wildlife Ideologies[1]

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FORESTRY AND wildlife problems have an understandable similarity. The constantly increasing demands on forest products are not unlike the everrising pressures on our limited wildlife resources. We who are engaged in restoration and management work realize that all living things are the product of the two basic resources, land and water, but that is not enough. The job of providing the necessities of life for 148 million people cannot be left to the few professional workers in the natural resource field.

All of us realize, for example, that wildlife abundance is related directly to the collective uses made of soils, forests, and waters. We know that wildlife is a byproduct of other uses made of our lands; that abundance is an indicator of healthy use of soils and forests; that a scarcity denotes an unhealthy use of these resources—but this knowledge in itself obviously does not lessen the problems nor does it get the job done.

Much is yet to be learned about intelligent integration of varying land uses. Some of the conflicts often appear to be insoluble. Nevertheless, the relatively young science of silviculture and the still younger one of wildlife management has come a long way, and occasionally we discover that certain problems are more imaginary than real. A high percentage of the current problems are human conflicts that must be attributed to public apathy, selfishness, or greed, and such limiting factors can and will be remedied.

There is a lot of talk today about socialism, regimentation, federal control, state rights, valley authorities, and other things that stimulate discussion of democratic principles—yet it is clear that if we are to manage the natural resources of this vast nation we first must learn to manage people. This is not a concept, it is a fundamental law of community existence. Those who do not discipline themselves have to be managed for their own good.

Better management of all kinds can be the only possible answer to the overall problem of maintaining adequate renewable resources in the face of the growing intensity of human use of land and water. Perhaps the science of forest management can be applied to every forest acre without changing the prevailing concept of government. In my opinion, however, the real answer to that is in the future. Many people are ready to accept the three-point program outlined in the reappraisal report of the U. S. Forest Service entitled *Forest and National Prosperity*, but, ready or not, there must be some changes made in the American way of life. By 1975, the population will have reached 185 million people and we will employ sound management practices then or else.

Americans are meat-eaters. They are accustomed to plenty. Whenever we gain another million persons we utilize the equivalent of another 150,000 steers, and that means 10 to 12 million more acres converted to cattle production. How long can this continue? According to a well-known biological axiom there is a limit to the total life that can be supported on a given area. The amount of that life varies, of course, with changing conditions. The trouble is, we have changed conditions and are not willing to make the necessary adjustments in our mode of living.

The time has come in this modern age when critical decisions must be made. We will have to adopt a well-defined and efficient pattern of land use on this continent to avert a crisis. There may be numerous objectionable features to the "task force" reports of the Hoover Commission, but, at least, they are studying the problems and are calling attention to the imperative need for action.

To get a higher rate of production, both in forest products and in many forms of wildlife byproducts, we must look to private lands. About three-fourths of all the forests and a still larger proportion of all of the timber growing capacity is on private lands, the same as with the bulk of the upland game resources. The job of increasing production, of affording protection, and of getting an efficient harvest is complicated by the fact that a high percentage of these private holdings are in small ownerships. In forestry, more so than with wildlife, such bad practices as clean-cutting and neglect follow size of ownership. The Forest Service, so I understand, has found that over 60 percent of all cutting is poor or destructive. History does not record an

[1]Presented at a meeting of the Washington Section, Society of American Foresters, Washington, D. C. March 24, 1949.

era when so high a percentage of a nation's natural heritage has been wasted in such a short period of time.

Some of the representatives of commerical interests are present, so I will add that their cutting record is not much better. They, of all people, should have the foresight to employ, and should be doing more to promote approved management practices. It is unfortunate indeed that we do not have more illustrations like the Lutcher-Moore Lumber Company of Texas, established in 1877, that "cut out" but did not "get out." That firm, so the story goes, changed its business to wholesale and retail until its cutover lands were restored and could be placed on a sustained-yield basis. Other examples undoubtedly could be cited, but the point is, there will be many more from time to time. In the future, short supply will force the big operators to adopt those practices that you technicians have been urging and you may look for more help on the private lands portion of your program.

While speaking of industry activities, it is gratifying to say that excellent progress was reported in the recent "Trees for America" meeting at the Waldorf in New York. The on-the-ground field work described in one progress report, includes several types of personal contact and demonstrational activities rather than the mere distribution of literature. More power to them. Maybe the tons of publications that have been distributed for years and years did some good but a much higher return can be expected from the local, extension-type of work.

This forest-wildlife program is so broad and complex that it is difficult to stay on any one topic. Then, again, there are so many federal agencies here represented that I do not know which one to criticize first. Since this is a meeting of professional foresters, maybe I should attack the entire fraternity on general principles. For many years I have been helping to fight your battles. Now, here among friends, let me say that foresters on the whole have been too narrow in their views. The more progressive ones now realize that they have been practicing tree forestry instead of land management. Some of the old-timers have learned to talk a good game of multiple use but, even today, in reality, they are still devoting the bulk of their efforts to fighting fires and growing trees.

Everyone is willing to concede that creditable progress has been made in all branches of forest management. Most of the foresters have learned that a forest has other values besides so many sawlogs. They are learning to manage public lands, but have not succeeded in selling their program to the public. The minority groups still have the offensive. Although I am speaking frankly, the record shows that I am one of your staunchest supporters.

It is difficult to draw work-progress comparisons in these related fields. The forestry program had a tremendous lead; it celebrated its 50th anniversary of professional education last year. You have done a good job, but despite the outstanding record that has been made, it is hoped that the wildlife program will advance more rapidly. If it doesn't, we will be out of business before we learn how to manage some wildlife species. You foresters have a merchantable commodity to sell to the farmer and rancher whereas we are dealing with a byproduct that frequently is appraised at its nusiance value. Wildlifers never will be able to interest a certain percentage of private land operators until game crops yield some cash return. It is unfortunate that all natural resources do not reflect their true values in ways that all can see.

One of the main reasons that forestry has been slow in catching on in many places is due to the overwhelming desire on the part of most people to figure everything in dollar values. Market prices for all forest products are determined to a large degree by the production cost of the most efficient operators. The most efficient operators are those who cut clean and get out. It will not be easy to change all this, but who would have thought a few years ago that we soon would be paying more for the sport of taking less ducks?

When speaking in terms of dollar values, let's be mercenary and practical for a minute. You are interested in better forestry management and no less than 30 million people want more fish and game. Of all the large land-management agencies, the Forest Service definitely has done the best job. Only a few selfish minority groups who are attempting to grab the public domain have challenged the splendid program that is being administered. Yes, the Forest Service has worked hard on forest, range, and watershed management, still they have refused to recognize the value of public relations. That is, it took them a long time to learn a few simple rules of salesmanship. At this very minute, their work is being handicapped because they will not use a

little "Mobile B," will not give credit for cooperation where credit is due, or attempt to solicit the support of large segments of the public who easily could be interested in their program.

Half of your job and mine is salesmanship. Sustained yield management through small cutting units spread over wide areas rather than the logging of large single tracts is good wildlife management. It is the kind of management that should be practiced on millions of private acres and on the 152 national forests in 42 states having a gross area of 220,936,000 acres, or net of 180,000,000 acres. One-third of the entire big game population in the United States, 2,470,000 animals, is on the national forests. Over 280,000 big game animals were taken by hunters last year. If multiple use actually were put into use on both public and private lands and if a few more people knew what this would do for them, the foresters would have an army of allies numbering into the millions when they need support for appropriations or for defense against exploiters.

There are 90,000 miles of streams and 1½ million acres of lakes on the national forests of this country. Last year, 1,200,000 big game hunters, nearly a half million small game hunters and 3,320,000 fishermen visited and enjoyed the forests, but despite all this interest, all this potential strength, few people knew it when it happened, or know now, two years later, that the trifling $163,000 appropriation of the Division of Wildlife Management in the Forest Service was eliminated by the Congress.

Public participation is the thing that made the Soil Conservation Service program the most popular and most successful, large-scale conservation program in history. Why is it, that the foresters and more wildlifers have not emulated this splendid example? Oh yes, some effort has been made in that direction, but part way measures will not do the job. Many illustrations of failure to take advantage of golden opportunities could be cited; one will suffice.

Several years ago, in Indiana, after we succeeded in forming more than 1,100 local conservation clubs with 240,000 paying members, and these clubs were operating more than 500 club-owned fish hatcheries and over 700 club-owned electric game-bird brooders, the emphasis was switched to habitat improvement. Environment development was the original objective, but we had to have public interest and support before any such long-term program could be launched. At that time we tried to get the foresters to help us start hundreds of club-operated tree and food plant nurseries over the state, and the answer was, "The club members might be able to raise millions of fish and thousands of pheasants and quail successfully, but not trees." Evidently it is wrong to produce seedlings away from state nurseries, at least, in Indiana. They continue to follow the Joyce Kilmer saying, and 3½ million Hoosiers still have comparatively little interest in forestry.

Getting back to appropriations, we know that it always is difficult to get funds for research and relatively easy to secure funds for maintenance and management. In scanning the dozens of forestry bills before the Congress, with their provisions for the expenditure of millions of dollars for reseeding and so forth, when what we really need is reductions in sheep and cattle grazing, we realize that the only answer for the elimination of the Forest Service wildlife appropriation is lack of understanding, which means poor public relations.

More than 24 million people visit the national parks annually and 30 million seek relaxation elsewhere in forests, fields, and streams. These recreationalists spend more than 5 billion dollars annually. Outdoor recreation is big business. Compare this 5 billion dollar business with other business totals reported by the Department of Commerce for 1947:

Retail sales

Motor vehicle dealers	$10,121,000,000
Filling stations	5,193,000,000
Womens apparel-accessories	4,030,000,000
Drugstores	3,616,000,000
Mens clothing-furnishings	2,314,000,000
Hardware stores	2,217,000,000

Before long, the foresters will be doing more and more forest-wildlife work. Multiple use will come into its own on a larger scale and the so-called master plan gradually will take hold on more private lands. Splendid examples of constructive programs already can be cited on public lands. Statements in outdoor magazines like the following excerpt on the cooperative wildlife management program on the Allegheny National Forest will stimulate greater interest in your work:

"The approach of this wildlife management plan on the part of the Forest Service is certainly an unselfish one. Aside from seeing good

conservation practices put into effect on their land, there can be no particular gain to this department in the entire program. The sportsmen on the other hand will gain immeasurably. . ."

The following excerpt from *Outdoor Life* tells the whole story and you will do well to encourage more articles publicizing this progressive attitude:

"The U. S. Forest Service has charge of more wilderness and game land than any other public agency. And it recently has held conferences with several state game departments on practical ways to build up wildlife populations in the national forests. There was a time when the Forest Service was committed to a policy of growing saw logs, with no thought of such byproducts as deer, game birds, and trout."

If the members of this Society would resolve to devote no less than 15 percent of their time to selling their program in new and different places, their future tasks will be simplified. If they will cultivate the acquaintance of their Senators and Representatives, will take them out into the field and show them their problems, without asking for anything, and will really bear down on the private-lands phase of the program, then we will not have to plead for support for urgently needed forest, range, and watershed management.

Abstract of Master's Thesis

Inventory of the Rich Lake Marsh, Huntington Forest, Newcomb, New York. By James E. Beach. New York State College of Forestry. 1949.

The study consisted of an ecological inventory of a 160-acre marsh area in the central Adirondack Mountains. The accumulated field data fall within two major categories: (a) the physical conditions of the area, and (b) the biological conditions of the area.

The physical conditions with respect to water resources, topographic features, soils, microclimate, and the past and present land-use practices are described.

The vascular vegetation of the area was investigated by means of a cover type survey and a floristic survey. In the cover type survey, the vegetation was classified into cover types; in the floristic survey, a quantitative determination of the abundance (coverage) and distribution of the terrestrial and aquatic plant species was made. A brief discussion of plant succession in the study area is also included.

The wildlife inventory of the area encompassed four classes of vertebrate animals: mammals, birds, reptiles, and amphibians. The presence of species in these groups was determined by means of visual and auditory observations and by trapping. Additional material on the activities, food and cover relationships, and populations of each species, to the extent of available data, is included.

Records of plant and animal phenology, obtained in the course of completing the various phases of the entire study, are described and presented in tabular form.

Industry Needs More Forest Economists—Now!

The forest economist is qualified to guide the management of a basic wood-using industry into the most profitable (or least unprofitable) use of its forest resources. Some of the many ways in which he can help improve the returns from forest properties are described in this article. In a period of depressed economic conditions his services are needed even more than in a boom.

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A FOREST economist should be well grounded in economic theory and business practice, able to apply this training to the problems of forestry. If he is not also a trained forester, he must learn enough about forestry to be able to get the help he needs from professional foresters. He must understand accounting principles and procedures well enough to be able to express to trained accountants his needs for cost and other accounting data and to make sure that he receives from them the figures he requires.

Few persons have training and experience qualifying them as forest economists competent to perform the work described below. Remuneration for those able to carry out these functions must be expected to be high. But the financial benefits flowing from this work should be so great that no large forestry enterprise can afford to be without the services of an experienced forest economist.

It goes without saying that silviculture is a very important part of forestry. Unless trees can be grown, there can be no forestry. Engineering is likewise important to forest industry. Until the trees can be harvested, transported, and made into useful products, there can be no enterprise. The role of economics in forestry is often less clearly recognized. But if the trees cannot be grown, harvested, made into useful products, and sold at a profit, private industry cannot long engage in forestry. The forest economist should complement the work of foresters, engineers, and accountants in the management of any industry dependent on wood as a major raw material.

Everyday "Economics"

Most of us have a very fuzzy idea of what an "economist" is or does and have an attitude of suspicion or mistrust toward him. There should be no mystery or confusion here. Each of us, to some extent and often imperfectly, acts as an economist in his everyday affairs. We may realize this when we are considering some major expenditure, such as the purchase of a house or a car. Economic principles are involved also in such decisions as whether to walk or ride, to eat a sandwich rather than a steak, to buy a hat rather than new shoes, to mow the lawn or to hire the neighbor's boy to do it. We do not consciously make an economic analysis of most of these situations, and our actions may not be what such an analysis would indicate; but wherever money, effort, or time are involved we have economic factors which could be subjected to scientific analysis if the problem were of sufficient importance.

The businessman must be much more consciously aware of economics in his business affairs than we are in our private lives. He considers costs and returns in hiring employees, changing the size of his operations, advertising his product or services, and in countless other ways. His decisions may occasionally be based on some factor stronger for him than the time, money, or effort involved. But unless he recognizes these elements and generally pursues the course of action indicated by their economic analysis, his returns will suffer and he may eventually be forced out of business by more economies-minded competitors.

When a business grows in size, specialists are usually called in to guide management. Engineers, lawyers, bankers, and accountants have long served this function. More recently professional foresters have added their knowledge and experience to the management of industries based on the use of forest products. With a growing realization of the complexities of weighing cost factors against marketing possibilities, many firms have also asked economists to advise and to guide management into appropriate decisions. In a few cases economists have been set to work with foresters and others on the forestry problems involved in private industry. It is the thesis of this article that trained forest economists can perform services which are useful, even indispensable, to their firms. In a time of recession their services are needed more than ever. To do without these services might prove a very short-sighted means of saving their expense.

Starting the Enterprise

In considering whether to start a particular wood-using industry, one must determine, among other things, whether the proposed process is possible from an engineering standpoint. It is no less important to make sure that it will be profitable. Its costs must be low enough to yield a profit on the quantity to be produced, considering the price at which this quantity can be sold in the market. The salable quantity and the probable price involve economics, as do the costs of the factors going into the production process. In particular, the wood supply must be studied carefully, since it may determine the size and length of life of the mill. The costs of the wood, including procurement and freight, must be estimated as accurately as possible. It must be decided whether to rely entirely on the open market for wood, or to what extent supplies should be insured by ownership and management of timberlands. The availability and probable cost of timberlands must be considered in reaching this decision.

These are problems in forest economics which should have the attention of a competent forest economist. They are basic problems, whose answers may determine the profitability of the entire enterprise.

Valuation of Timberlands

If the decision is made to own timberlands, the necessary properties must be acquired. The comparative valuation of timberlands being considered for acquisition is a proper function of the forest economist. The timber cruise has long been the traditional basis for valuation in acquisitions. Primary emphasis has been placed on the volume of merchantable timber on the land and secondary emphasis on the ease of logging and distance from the mill. Reproduction already present and the growing qualities of the soil were often given no value. With increasing competition for the purchase of forest lands to be managed, rather than cut over and abandoned, and with growing knowledge of landowners concerning the value of their properties, it has become almost impossible to buy land on the old valuation basis. It is becoming evident that it would also be unwise to do so.

The forest economist should make a thorough economic study of each property being considered for purchase. He must value accurately the merchantable timber, reproduction, and growing qualities of the soil, and consider the effect of logging conditions and the cost of transportation to the mill or other market. He should study every other factor which adds to or detracts from the value to his firm of the particular property under consideration. These factors are many, and may include such things as proximity to other holdings which would reduce management and protection costs, timber or reproduction in an age-class in which the present holdings are deficient, or location in a different labor market or climate area than other holdings. The valuation report should set forth the forest economist's best estimate of the value of the property to his firm. It should be left to those responsible for the buying to shade their bargaining so that the company will have some margin between the true value to them and the final price agreed upon.

Once purchased, timberlands need not be held forever. With changed circumstances it might be desirable to sell some land, or some of the timber, in order to use the funds to purchase different lands or timber, or in other ways. The same type of analysis and report should be prepared to evaluate each property under consideration for sale. Past costs have no effect in determining the present value of the property to the firm. Only future costs and future incomes, discounted to the present, should be considered.

Accounting and Statistical Records

Land acquired must be managed and protected so as to yield the best possible return. Trained foresters should estimate within reasonable limits of accuracy the existing stands, rates of growth, and probable future volumes. They should be able to indicate what might be done silviculturally under various possible programs of planting, thinning, and harvesting. The forest economist should translate these estimates into financial terms, considering costs and probable returns. He should then indicate which silvicultural program seems best financially, in the light of mill requirements or market possibilities.

One of the first steps in managing a forest property involves dividing the timberlands into convenient areas according to physical location. We shall call these divisions working units. Property records, cost accounts, income allocations, and statistical records should be set up according to working units in such a way that it is possible to assemble reasonably accurate cost

and investment information for each unit to be compared with the production and income realized or expected from it.

At the time the working units are set up, the accountants should divide the capitalized book value of the forest properties already carried in the accounting records as accurately as possible over these units so that each will show its proper share. Properties newly acquired should be charged to the appropriate working unit accounts. Depletion taken on timber cut should be credited to a depletion reserve section in each account. These records should be set up as a detailed timberlands subsidiary ledger, supporting the entries in the general ledger. Realized income and expenses should be allocated to individual working units, and these should likewise be controlled by the general ledger accounts. With such records established and being maintained by the accountants available for his use, the forest economist should have reliable dollar figures pertaining to his firm's forest properties and operations which will permit him at least to start carrying out his function of testing every proposal in terms of its probable financial results.

Accounting records, even if kept in the suggested manner, will often not present a correct picture from year to year concerning the operation of a forest property, if the figures are summarized only in the usual way. Expense must be incurred over a long period while the trees are growing, yet substantial income may be realized only when the bulk of the trees are cut. Profit and loss statements prepared from the accounts in the customary way would probably indicate for many years that the forest property was operating at a loss, and occasionally that it was extremely profitable. To supplement such statements prepared from the regular accounting records, the forest economist should work with the foresters and accountants to provide management with a different type of statistical report.

In this statistical report, in place of the income realized currently from timber sales there would be shown an estimated figure representing the increase in value of the forest properties resulting from timber growth that year. Expenses and income other than from timber sales would be presented as taken from the accounting records. The result would show for the forest properties a net profit or loss arrived at by comparing "production" (the annual increase in value through tree growth), whether sold or not, with the net expense incurred in obtaining this increase in value. This information should be summarized for top management and shown by working units for operating management. The forest economist should estimate the value of current growth from growth data furnished by foresters and from price information obtained from his studies of the timber market; the rest of the figures needed would be in the regular accounting records. A statistical report of this type seems essential to inform management whether and to what extent their forest properties are operating at a profit or at a loss on a long-term basis.

In addition to making use of the records kept by the accountants and of the annual statistical report suggested above, the forest economist may find it useful to set up permanent statistical records for each working unit. Starting with the original cost, adding subsequent costs and carrying charges, deducting income realized, and applying a suitable rate of compound interest, he can determine the investment in each unit of the timberlands at the end of the year. Comparing this investment figure with its present worth will indicate for each unit its profit or loss to date. The knowledge of the success or failure of past operations measured in this way should be used by the timberlands managers as a guide to their future programs.

Other Economic Problems

In the protection and harvesting of timber many forestry, engineering, and other problems are involved. Few of these are without financial (economic) aspects. The forest economist should consult with the experts in these other fields in order to help them develop suitable methods which are least expensive per unit of product. For example, he should work up data on risks of fire losses and costs of fire protection methods, to provide the foresters with financial information they need in order to decide such things as the type and spacing of fire lines, location of fire towers, and extent of fire patrol activities. With the foresters' data on the volume and his own estimates of the value of the present and expected future timber stands in different locations, the forest economist should be able to help provide forest engineers with cost and income figures they need to determine, among other things, the type of construction and spacing of roads, skidding distances, and most

economical equipment to use in harvesting timber. His studies should help them to minimize transportation costs.

The alert forest economist will find innumerable ways to help his management in making their decisions, by working out for them the financial implications of the various alternatives. For example, he might study the economics of such problems as whether to buy or to hire equipment, whether to continue using old equipment or to buy new, whether to get a job done by contract or by expanding the organization, whether to set up a company shop or to have repair work done outside, and where to locate offices and field supervisors' headquarters. It is understood that the possibilities would be determined and final decisions made by the foresters or engineers; but almost every decision which these forest managers must make might be made better if they could have the benefit of the forest economist's study of the financial aspects of the problem.

Conclusion

The forest economist cannot be omniscient. His work involves a continuous process of learning new facts and discovering new applications for the principles of economics and statistics to forestry, as well as applying time-tested facts and procedures to the more familiar problems. He is trained to consider particularly that very important aspect of all proposals—the economic—that relation between costs and returns and between alternatives which must be judged correctly if the enterprise is to succeed financially. This function must be performed in any case; but the trained forest economist should be able to perform it better within his sphere than anyone else.

The introduction of this specialist into the organization may be resisted and resented by those in the management group whose present functions he complements. Doing his job conscientiously, he cannot avoid checking and possibly disagreeing with the figures and recommendations of other specialists who may not have considered all of the financial aspects of their problems. The forest economist is particularly vulnerable, because he must rely on these others for much of his information. To do his work effectively he must be brought in at the earliest stages in the consideration of a new program or policy, so that his contribution to the thinking can be given to the management group before they have reached a decision.

Without strong support from top management and sympathetic acceptance from operating management, the forest economist cannot perform his job properly. In his broad field of action he should be best able to help maximize profits or minimize losses. Both management groups should support and accept the forest economist and eagerly help him to help them in their work. This specialized function is not one which can be afforded only in good times. It is even more essential under depressed economic conditions to help insure the very survival of the enterprise.

Gum Flow from Turpentine Pines Inoculated with the Pitch-Canker Fusarium

Application of a method of prolonging adequate flow of oleoresin from wounded slash and longleaf pine, and reducing the frequency of chipping required, can increase the efficiency of gum production by reducing labor costs. Treating fresh wounds with sulfuric acid is one way to do this. It has been suggested that inoculation with a fungus might further prolong the flow from treated wounds. The study indicates that the initial flow of gum from wounds on slash pine may be prolonged at an adequate rate for an average period of 5 weeks by inoculating the wound with the pitch-canker fungus. Later rechipping and reinoculation induced adequate flow for 3 weeks per treatment. In longleaf pine the initial flow averaged 3 weeks, and flow from the later treatments seldom lasted more than 2 weeks. Safe and economically sound practical uses for this fungus in naval stores practices may perhaps be found as a result of further investigation.

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A CONSPICUOUSLY pitchy stem-canker disease of hard pines, now termed pitch canker, was first found by Hepting in the spring of 1945 near Asheville, North Carolina (*2*). It attacked Virginia pine (*Pinus virginiana* Mill.), and, to a lesser extent, pitch and shortleaf pine (*P. rigida* Mill. and *P. echinata* Mill.), killing young leaders and laterals on these species, and on Virginia pine also forming conspicuous trunk cankers. Sectors of heavily pitch-soaked wood were found beneath the somewhat sunken bark-covered cankers which typically bore no fruiting bodies.

A Fusarium readily isolated from these cankers reproduced the disease when inoculated into healthy twigs. Hepting and Roth (*2*) contrasted the symptoms of pitch canker with those of pine canker diseases caused by species of Atropellis, Caliciopsis, and Cronartium. More recently this Fusarium has been identified as a form of *F. lateritium* and named *F. lateritium* f. *pini* (*5*). Slash and longleaf pine, *P. caribaea* Morelet and *P. palustris* Mill., now are recognized hosts of this disease, which has been found widely distributed from Virginia south to Florida and Alabama, although no comprehensive survey has been made to establish the exact limits of its distribution. On Virginia pine the cankers may appear on branches and leaders, but the disease is most damaging because of its formation of trunk cankers. Trunk cankers are seldom found on large trees of species other than Virginia pine.

Excessive pitch flow has long been recognized as a prominent symptom of several fungus diseases of coniferous species. Hepting, however, looked at the pitchy cankers of the relatively nonresinous Virginia pine from the viewpoint of the naval stores producer, and, in a preliminary experiment in June of 1945, inoculated some turpentine wounds made on Virginia pine with the Fusarium grown in Tochinai liquid media (*1*). From the inoculated wounds prolonged gum flow was obtained, which continued throughout the summer season and, after a winter rest, began again the following spring without any mechanical reopening of the wound. Little or no gum came from uninoculated control wounds or from wounds treated with killed spores of the fungus suspended in the sterilized liquid media. To express such gum-yield results quantitatively, Hepting ran another experiment in early August 1946, adopting a procedure worked out by Ostrom and True (*3*). These inoculations were made in small circular standardized wounds of four Virginia pines, four shortleaf, and two longleaf pines growing near Asheville. He found that, while a slight gum flow from uninoculated wounds and from wounds receiving the spore-free filtrate of the medium in which the fungus grew, was over in 5 days, flow from the inoculated wounds continued at an almost constant rate until stopped by cold weather nearly 100 days after the inoculations were made. The rate of flow from inoculated wounds was faster for the one longleaf tree on which inoculation was successful, slower for Virginia pine, and least for shortleaf pine. This information led to the studies on the effect of *F. lateritium* f. *pini* on gum flow from naval stores pines (slash and longleaf), which were conducted at Lake City, Florida, and are reported here.

Punch-Wound Study

The first Florida study of the gum-flow response of slash and longleaf pine to inoculation with *F. lateritium* f. *pini* utilized the punch-wound method. This procedure involves the use of uniform small wounds made by driving a sterilized ¾-inch circular steel punch through the bark to the vicinity of the cambium or somewhat deeper if desired, and removing the excised plug. A miniature metal apron is attached below the wound to guide the gum into a straight-sided vial where measurements may be made periodically with a calibrated scale (Fig. 1).

The first punch-wound test was begun December 17, 1946, to determine whether Florida isolates of *F. lateritium* f. *pini* would prolong gum flow in slash and longleaf pine. This early preseason date was chosen so that early results of the punch-wound study would be available by the time the regular turpentining season started in mid-March or early April. Sets of ten trees each were tested simultaneously. The average diameter of slash pine was 11.3 inches; of longleaf, 10.4 inches. The trunk of each tree received eight wounds and each of eight treatments was assigned at random to one among the eight wounds on each tree. Each treatment, therefore, occurred once on each of ten trees. Two wound depths were used: cambium depth, and ¼ inch into the wood. These were intended to be roughly comparable, respectively, to the cambium-depth and ½-inch-depth chipping practices used in the naval stores industry. To wounds of each depth four treatments were applied:

1. Inoculation with *F. lateritium* f. *pini* isolate I.
2. Inoculation with *F. lateritium* f. *pini* isolate II.
3. Application of sulfuric acid to uninoculated wounds. Forty percent sulfuric acid was used on slash pine and 60 percent on longleaf in accord with recommended chemical stimulation practices for the two species in commercial operations.
4. Neither inoculum nor acid was applied to untreated control wounds.

Both the inoculum and the acid were sprayed on with an atomizer. The gum was measured daily for 31 days, and at 2-week intervals thereafter until April 10 in the case of longleaf and June 25 for slash pine. In no case were wounds reopened or enlarged.

The untreated control wounds in all cases gave the lowest yields after the first day or two and most of the yield of the controls was accounted for by the fifth day.

The uninoculated acid-treated wounds always produced more gum than any of the others during the early part of the 31-day period. In most cases their cumulative yield curves flattened off to fall behind those of the inoculated punch wounds before the end of the month.

Wounds inoculated with isolates I and II pro-

FIG. 1.—Punch wound with apron and vial installed. The volume of gum in the straight-sided vial may be measured readily with the aid of a calibrated scale stick held against the side of the vial.

duced similar gumflow patterns. The average flow from inoculated wounds exceeded that from the controls even on the first day (Fig. 2). By the third day their cumulative yield curve was rising faster than that of the controls. From this time on their flow rate was in part dependent on temperature, but tended to rise rather gradually for the first 10 or 12 days and then increasing sharply to exceed that from either uninoculated series toward the end of the 31-day period.

Yields from inoculated wounds had started out higher in longleaf than in slash pine but after 4 to 6 weeks their flow rate decreased markedly. Flow from slash pine likewise decreased but not until after the sixth week.

Studies on Turpentine Faces

When it became clear from the punch-wound test that inoculation had prolonged gum flow considerably beyond that obtainable with regular untreated chipping or with acid treatment, studies were undertaken employing regular turpentine faces and other wounds. The first test of this type was begun on February 17 about a month in advance of the start of the normal chipping season. Comparable 10-tree groups of slash and longleaf pine were wounded in four different ways as described below. These wounds were then inoculated with isolate I. Uninoculated weekly chipped controls and biweekly chipping with acid treatment (*4*) were run concurrently with the inoculated treatment series. Inoculum was applied to several types of wounds, all occupying one-third of circumference of the trunk:

1. Bark-depth wounds cut diagonally at an angle of about 30 degrees from the horizontal and ¾ inch high.
2. Diagonal wounds ½ inch high extending ½ inch into the wood.
3. Horizontal wounds ½ inch high extending ½ inch into the wood.
4. Double diagonal V-shaped wounds ½ inch high and ½ inch into the wood, comparable to the initial wounds made in commercial turpentining. (Fig. 3).

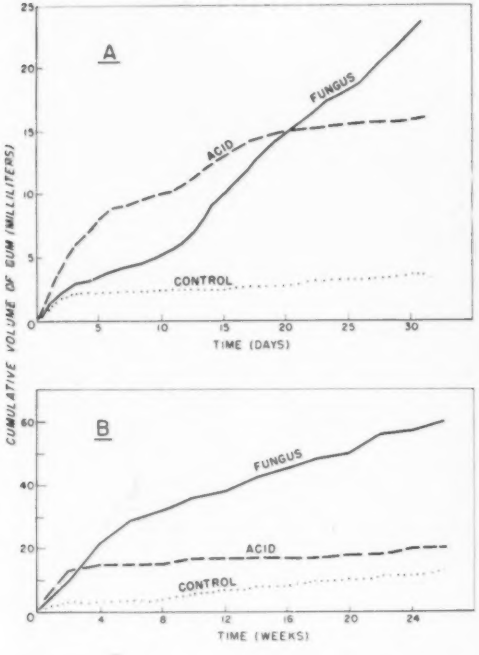

FIG. 2.—Accumulated yields from bark-depth wounds on slash pine receiving: fungus treatment (average of 2 isolates tested); acid treatment; no treatment (controls). *A*, daily observations for the first 31 days; *B*, yields by 2-week periods for 26 weeks after treatment.

FIG. 3.—Inoculated wound made like the virgin streak of a regular turpentine face, with cup and gutters installed.

Acid treatment with biweekly chipping was applied to uninoculated wounds of type 1 while untreated chipping was used on wounds of type 4. Inoculated wounds were left unchipped until the flow rate sank to or below 50 percent of that from the untreated controls.

Inoculum was prepared by sowing petri dishes containing potato sucrose agar with spores of *F. lateritium* f. *pini* and allowing the mycelial mats to grow until most of the surface of the agar was covered. Distilled water, boiled and cooled, was then introduced, and spores and mycelial fragments were dislodged with a camel's-hair brush. The suspension of mixed spores and mycelium from several dishes was collected and the larger fragments were filtered off through cheese-cloth. The filtered suspension was used at once. The inoculum was sprayed on so as to cover completely all portions of the wood and inner bark exposed by the wound. General infection of inoculated wounds took place in every case.

Initial gum yields from inoculated commercial-type streaks were very encouraging. Without subsequent chipping the inoculated faces produced gum at a rate nearly comparable to that of the weekly chipped, but uninoculated, controls for a period of 6 weeks for longleaf and 7 or 8 weeks for slash pine. After this initial period of prolonged adequate flow, yields from inoculated wounds fell far below those from uninoculated faces.[1] A series of attempts to renew prolonged flow on an adequate basis from inoculated faces by rechipping the wounds without reinoculation failed to do more than to induce quite high yields for 2 or 3 weeks. The failure of rechipping to stimulate flow may indicate that the fungus did not penetrate beyond the chipping or that the fungus had been inactivated.

Reinoculations were made first into streaks freshly cut into the partially pitch-soaked wood directly above the inoculated wound, then into clear white wood and healthy bark tissues close above the wound, and finally into apparently normal tissues 1 and 2 feet above it. After cessation of adequate flow it was usually necessary to chip away 2 inches of pitch-soaked wood or bark in order to reinoculate into the clear white tissues above. All types of reinoculation gave brief periods of abundant flow but failed to renew a prolonged adequate flow similar to that which had followed the initial inoculation.

In similar though usually less extensive experiments begun in April, May, August, and October, 1947, and in April, May, June, and July of 1948 to determine the effect of season on the initial response and later yields, the periods of initial adequate flow for slash pine averaged 5 weeks in length for all tests. The average length of the flow periods resulting from subsequent chipping and reinoculation was 3 weeks (Table 1 and Fig. 4). Tests on longleaf pine in 1947 showed that the length of the original period of adequate flow for that species

[1]Until the rate of gum flow from treated streaks fell to less than 40 percent of the highest weekly flow rate resulting from the first treatment, it was considered adequate. The average weekly flow during this period proved to be nearly the same as that from corresponding controls receiving untreated weekly chipping during the same period.

TABLE 1.—AVERAGE DURATION AND VOLUME OF ADEQUATE GUM FLOW FROM TURPENTINE FACES ON SLASH PINE TREATED WITH *Fusarium lateritium f. pini*

Test	Date started	Average duration of adequate flow[1]		Average weekly flow			
		First treatments	Later treatments	First treatment period		Later treatment period	
		Weeks	*Weeks*	Fungus-treated	Untreated controls	Fungus-treated	Untreated controls
				Grams	*Grams*	*Grams*	*Grams*
1	2-17-47	7	3	54	58	98	108
2	4-16-47	5	3	86	83	147	110
3	5-5-47	7½	3	103	90	120	120
4	8-25-47	4	—	166	—	—	—
5	10-29-47	4	—	66	—	—	—
6	4-5-48	3	—	72	97	—	—
7	4-5-48	4	3	97	—	139	—
8	5-10-48	6	2	117		163	
9	6-1-48	4	3½	119	138	118	120
10	7-7-48	4	—	118		155	
Average		5	3	87[2]	93	121[2]	114

[1]So long as the rate of gum flow from treated streaks remained greater than 40 percent of the highest weekly flow rate resulting from the first treatment, it was considered adequate.

[2]Average weekly flow from those groups of treated faces for which corresponding untreated control averages are available tests 1, 2, 3, 6, and 9 in first treatment period and 1, 2, 3, and 9 for later treatment periods).

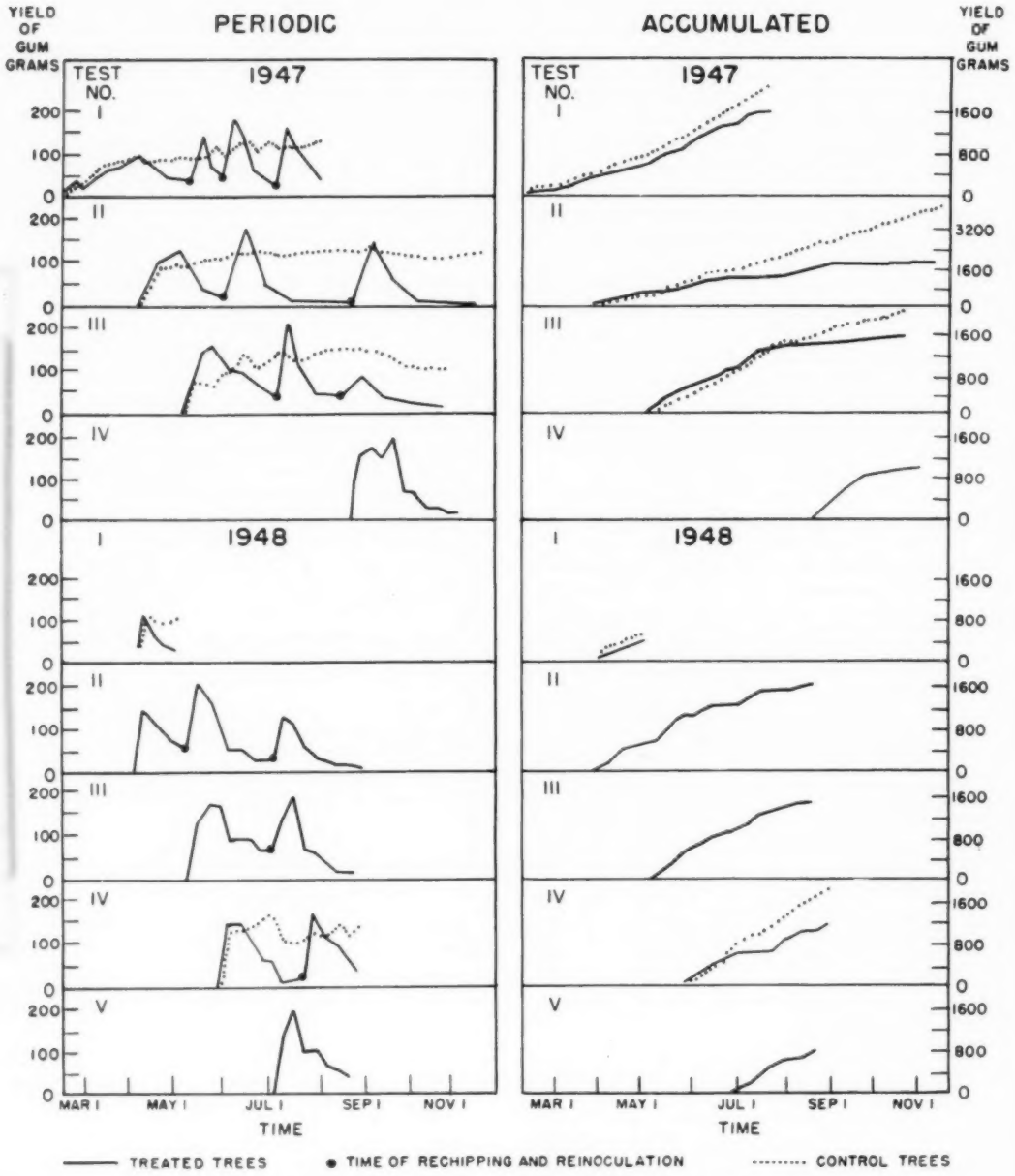

FIG. 4.—Periodic and accumulated yields per tree from gumflow tests of fungus treatment conducted during 1947 and 1948. Yields in test II of 1947 measured at 2-week intervals; yields in other tests measured weekly.

averaged 3 weeks, and that the adequate flow periods resulting from rechipping and reinoculating the same faces seldom exceeded 2 weeks.

The figures upon which the averages for slash pine are based showed rather wide variation and were generally somewhat lower in 1948 than in 1947. Yield tests in 1948 with refrigerated isolates, fresh isolates, and refrigerated isolates reisolated from inoculated trees showed that refrigerated isolates used in 1948 tests still prolonged gum flow at as high a rate as any included in the test.

Discussion

It is not yet clear whether *Fusarium lateritium* f. *pini* will prove to be more important as the parasite causing the pitch-canker disease of hard pines or as a fungus agent assisting in naval stores production. However, it is probably the first parasitic fungus to be used even experimentally to increase the efficiency of naval stores production.

The length of the periods of adequate flow obtained on slash and longleaf pine in the naval stores belt are in somewhat disappointing contrast to the season-long flow obtained by Hepting with Virginia pine, a species which yields much less gum than slash or longleaf pine.

Not much is yet known about the possible danger of using the pitch-canker Fusarium to stimulate or prolong gum flow in stands of naval stores pines. The fungus spreads so slowly and to such a limited degree around trunk wounds in turpentine pines that it seems to offer little or no threat to the health of the tree when introduced into turpentine faces. This is in contrast with the action of three fungi originally isolated from turpentine faces affected with dry face. These have also been shown to stimulate or prolong gum flow from inoculated wounds but in many cases they finally bring about the dry face condition (*6*).

Observations are being made on the effect of using *Fusarium lateritium* f. *pini* in naval stores operations upon the incidence of the disease in adjacent young slash pine reproduction. Within the turpentine belt it is in such stands of young slash pine that the pitch canker disease seems to do greatest damage. In this young reproduction it is also most easily recognized and its severity most readily determined.

Uses for fungus stimulation may perhaps be found which will prove both safe and economically sound. If adequate flow can be repeatedly prolonged in slash pine by chipping and inoculating every 3 weeks, such a procedure might prove satisfactory for that species from the standpoint of the yields obtained. Present indications are that so much wood or bark will have to be removed each time the trees are chipped and treated that this high chipping may prove a drawback and perhaps a limitation to the usefulness of the method.

Summary

Treating freshly cut virgin streaks of turpentine faces with the pitch-canker fungus, *Fusarium lateritium* f. *pini* prolonged the period of commercially adequate gum flow (normally 1 week) to an average of 5 weeks for slash pine and 3 weeks for longleaf pine.

Later rechipping and retreatment of the same faces prolonged adequate flow for an average of 3 weeks with slash pine and for usually not more than 2 weeks with longleaf.

No reason is known to account for the difference between the prolongation induced by the initial and by later treatments.

Decision on the commercial usefulness of the fungus as a gum-flow stimulant must await the results of further investigation.

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Grade Labeling Tree Vigor in Forest Managemet

This article suggests that the forester should learn to thin stands in harmony with natural selection in the forest. The trees to be gradually cut are those which will gradually pass out of the stand due to natural causes. The selection of these trees is implemented by the use of tree vigor grading rules. The study was completed with foresters of the Minnesota Division of Forestry and of the Minnesota & Ontario Paper Company, International Falls, Minn.

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A PURE stand of 48-year-old even-aged jack pine, near the northern Minnesota Town of Togo, was thinned for pulpwood in 1938. The project area of 120 acres, described in 1942,[1] was operated on a commercial basis. The trees were marked for cutting and the forest was reduced to three stand densities corresponding to light, medium, and heavy thinnings. The three thinned blocks compared well before cutting, the number of commercial trees per acre ranging from 325 to 384. From 352 to 366 cords of pulpwood were cut, at the rate of from 7 to 14 cords per acre, from each of the blocks. The 12-acre control block, from which no trees were cut, differed from the other areas only in the initial number of stems. The stand had only 268 trees per acre. The forest area was between a fair and a good site quality, with an average dominant tree height of 60 feet in 48 years.

Thinned largely, though not completely, from below, the cut was made with no thought of diameter limits. Full-crowned trees of good form in the dominant or codominant crown classes were left in so far as the weight of the thinning permitted.

Six and one-half years after the thinnings were made 37 random one-fifth-acre sample plots were remeasured. There were 2,188 trees within these plots and each tree was graded at the time of remeasurement. The stand within the samples fairly represented the whole area.

During most of the 6½-year growth period the stand was exposed to normal weather conditions, but in 1936, 1938, and 1939 hot, dry weather prevailed throughout much of the growing season. These dry years, and the shock of the thinning, probably caused the jack pine bud worm (*Archips fumiferana* Clem.) to increase to the point of infestation. Partial defoliation carried over into 1941 and caused some increase in the mortality rate.

[1]Stott, Calvin B. Comparison of logging costs with clear cutting and several intensities of selective thinning in northern minnesota jack pine. Jour. Forestry 40: 544-551. 1942.

Results of the Thinning

Pulpwood growth in cords.—It seems quite clear, from the summation of results in Table 1, that jack pine trees of moderate age, on a fair to good site, respond well to carefully handled selective thinning. Remeasurement of 37 plots, or 7.4 acres of random sample, show a growth of one-half to three-fourths of a cord per acre per year, after deducting mortality. The growth is definitely correlated with the intensity of the thinning. The heavy thinning, with a residual tree count 26 percent lower than the light thinning, nevertheless caused a 12 percent increase in pulpwood growth. The unthinned stand, with 1½ percent more trees than the heavily thinned stand, produced 24 percent less pulpwood growth.

Figure 1 sums up the growth by tree size. While the unthinned stand has a lower stocking than most of the thinned ones, the trees of all diameter classes on the thinned areas grew faster. The response of the 5-inch trees indicates that their vigor was better than average at the time of the thinning. Small, crowded trees in the lower diameter classes seldom recover after severe thinnings or heavy diameter limit cuts in 40-to-60-year old jack pine, unless the trees are younger than the main stand age.

Pulpwood mortality in cords.—Table 2 shows that the volume of pulpwood lost is, roughly, inversely proportional to the severity of the thinning. The heavier the cut, the lighter the mortality.

It is evident that one of the greatest gains to be made by thinning pulpwood stands is in the salvage of potential mortality.[2] These sample plots indicate that during 6½ years on the entire 132-acre timbered area, 140 cords of pulpwood and 407 trees were lost. This is almost one-fourth of the amount of wood grown during the same period. The losses were two to three times as heavy in the lightly thinned and the unthinned stands. Mortality cannot be eliminated

[2]Eyre, F. H. and Paul J. Zehngraff. Supplying Lake States needs for pine pulpwood through thinning. Canadian Pulp and Paper Assoc. Woodlands Section. Index 803. June 1945.

by thinnings, but it can be reduced. As we improve our ability to select trees, controlling the cut so as to leave the optimum growing stock, these losses will be reduced still more.

Casual observation today throughout the stand shows that the losses have fallen off during the past 5-year period in the thinned stands. Most of the losses occurred within a few years after the thinnings were completed.

Tree growth by tree grade.—A large part of the total growth in the wild forest is often contributed by a small part of the trees in the stand. After partial cutting, where the growing stock has been carefully chosen, the trees are more nearly equal producers. Nevertheless, the spread between trees of high and low vigor is still great after thinning, and subsequent cuts are clearly indicated. They can be definitely controlled by a preliminary tree-vigor-grade cruise of the tract. The "controlled cut" becomes an actuality when trees of high and low value as growing stock are systematically segregated in advance as a guide to the timber marking job to follow. This cruising job does not take much time. Excessive sampling must be avoided by the acceptance of a reasonable accuracy standard, and the use of statistical methods. The practice of flash grading develops rapidly after the basic standards for tree grades are understood.[3,4]

Fine degrees of difference in the growing qualities of trees become readily apparent to the timber markers who systematically grade them. Those who do not do so sometimes leave poor growing stock, and are apt even more frequently to mark fast-growing trees for cutting.

The trees in this study were graded at the time the plots were remeasured in 1944. Crown position, crown density, bole form, and bole soundness were considered in three to five degrees, or condition classes each. Bole form showed little correlation with growth and the results are not given. Bole soundness was no problem in this stand, and the field data were not computed. The growth summary by crown position and crown vigor is given in Table 3.

Outstanding in this table is the large share of gross growth contributed by the dominant and high-vigor trees. Dominant trees in the unthinned stand make up 55 percent of the total growth, showing the effect of well expressed crown dominance, a condition which prevailed over the entire tract before the thinnings were made. Under circumstances such as this, it seems logical that thinnings remove suppressed and intermediate trees and not dominant ones.

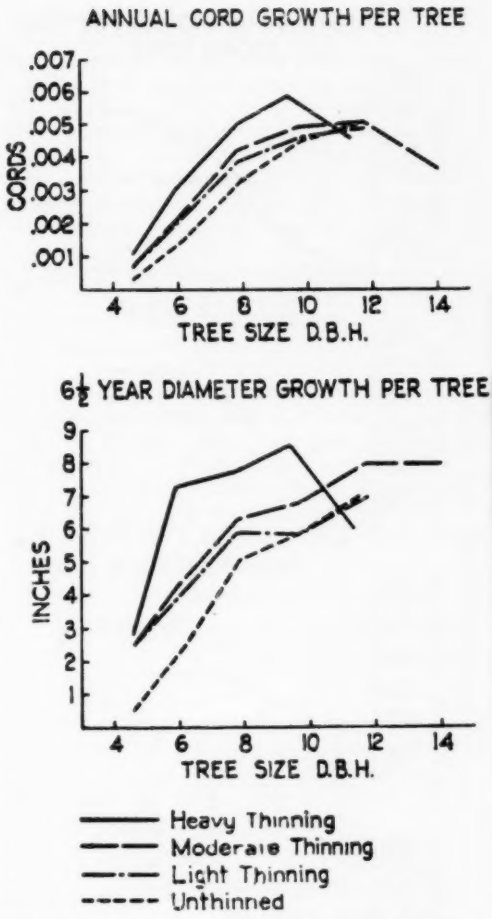

FIG. 1—Jack pine stands respond to thinning done on a tree grade basis.

[3]Gevorkiantz, S. R., Paul O. Rudolf, and Paul J. Zehngraff. A tree classification for aspen, jack pine, and second growth red pine. Jour. Forestry 41:268-274. 1943.

[4]U. S. Department of Agriculture, Forest Service, Region 9, Milwaukee, Wisconsin. Suggested hardwood tree class standards for farm foresters. January 1943.

TABLE 1.—COMMERCIAL PULPWOOD GROWTH IN 6½ YEARS

The stand	Growth less mortality per acre per year	Growth rate	Trees per acre left in 1938
	Cords	*Percent*	*Number*
Unthinned	.56	2.0	268
Light thinning	.66	2.9	355
Moderate thinning	.72	3.6	312
Heavy thinning	.74	5.2	264

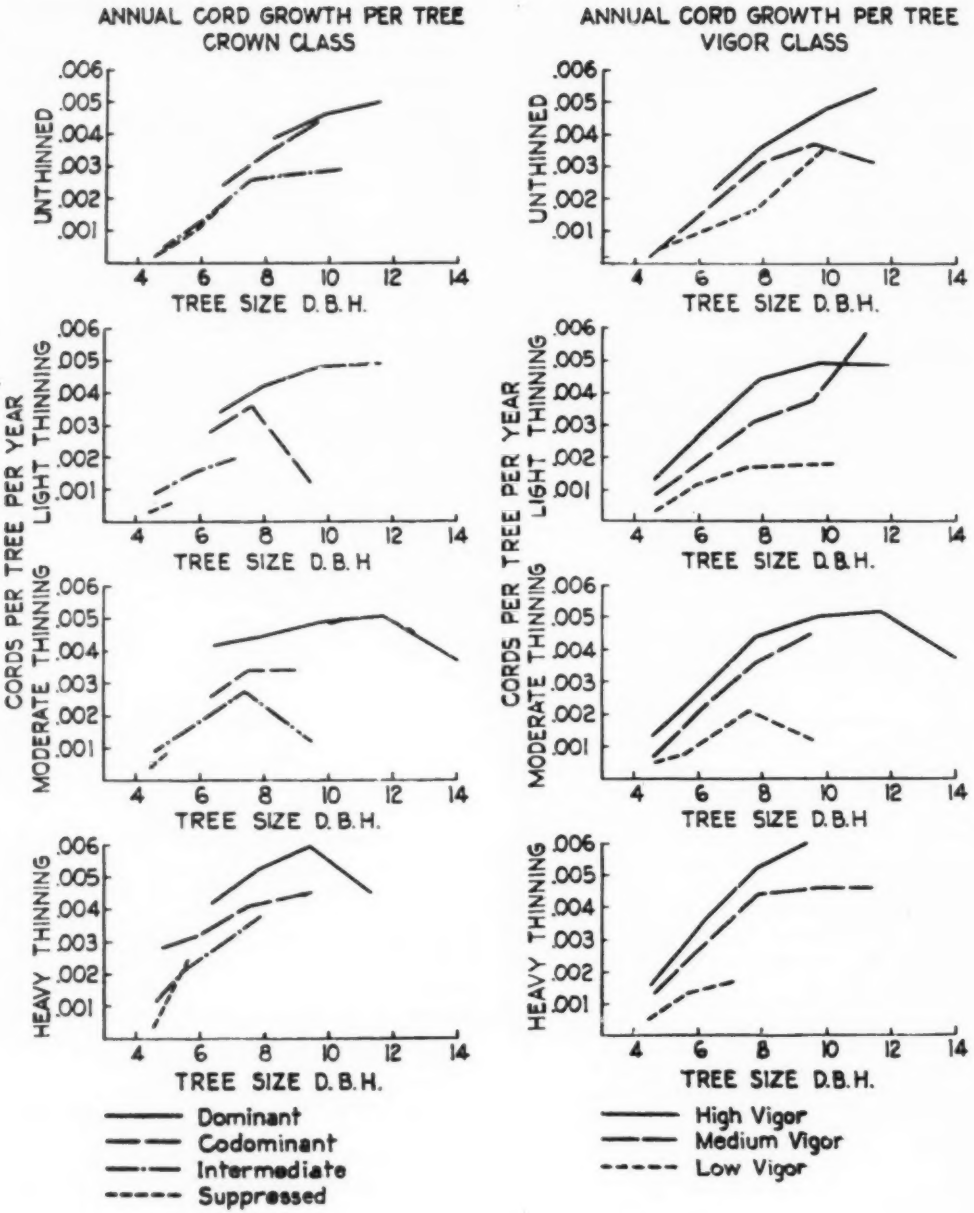

FIG. 2—Some results of thinning on a tree grade basis.

Heavy thinnings, somewhat to be favored in 48-year-old jack pine, also require the removal of a part of the provisional trees, or those which stand midway between the progressive and regressive classes. Light thinnings take regressive trees almost entirely.

Figure 2 shows the differences in growth between crown and vigor classes by tree size and by intensity of thinning. It is not known whether the superiority of the dominant, high-vigor trees is due to some inherent characteristic or to some advantageous position held by the tree in the young stand. These questions are really academic. The important fact is that although only 37 percent of the trees in the thinned stands were dominant, these trees produced 56 percent of the pulpwood growth. Thirty-six percent of the stems produced only 16 percent of the growth in the intermediate and suppressed trees. Growth by crown vigor grade tells the same story. High-vigor trees contributed 70 percent of the growth from only 54 percent of the trees. Low vigor trees made up only 3 percent of the growth from 10½ percent of the trees.

These examples show that it is for the trees midway between the best and the poorest growers that thinnings are made. The growth rate of progressive trees with clearly expressed crown dominance is good in any stand, and is not improved a great deal by thinnings. Such trees should be kept in the stand. Regressive trees grow poorly and are commonly lost. These trees should be cut and used periodically. Provisional trees between these two extremes are spurred on by thinnings, but are retarded, and many eventually lost, in the natural stand. These in-between trees seldom move upward in the intolerant forest unimproved by thinning because existing dominants maintain their position in the stand too strongly. It is not the nature of an intolerant wild forest to build up the growing qualities of provisional trees. Only man-made thinnings can do this, by removing trees on the border line of inaction, thus reversing the downward growth-trend of the remaining provisional trees.

It is written in old forest lore, that it is wise to thin early, often, and with ever increasing severity. If this is done, and each thinning is guided by a preliminary cruise, separating the trees into two or three vigor classes, there seems to be little need for other guiding standards except perhaps, as a check on the overall stand density.

TABLE 2.—COMMERCIAL PULPWOOD MORTALITY IN 6½ YEARS

The stand	Volume lost per acre in 6½ years	Trees lost per acre in 6½years	Area in tract
	Cords	*Number*	*Acres*
Unthinned	1.7	33	12
Light thinning	1.4	38	55
Moderate thinning	.7	24	40
Heavy thinning	.6	25	25

TABLE 3.—AVERAGE GROSS GROWTH PER ACRE PER YEAR 6½ YEARS AFTER THINNING

Mortality not deducted

The stand	Growth in cords by crown position				
	Dominant	Codom.	Intermediate	Suppressed	Total
Unthinned	.45	.27	.09	.01	.82
Light thinning	.47	.25	.16	Neg.	.88
Moderate thinning	.45	.24	.13	Neg.	.83
Heavy thinning	.50	.21	.11	.01	.83
Average	.47	.24	.12	.01	.84

The stand	Growth in cords by crown vigor			
	High	Medium	Low	Total
Unthinned	.59	.17	.06	.82
Light thinning	.61	.24	.03	.88
Moderate thinning	.58	.22	.03	.83
Heavy thinning	.58	.23	.02	.83
Average	.59	.22	.03	.84

Conclusions

This 48-year-old jack pine pulpwood stand, on a fair to good site, responded well to thinning. Over a 6½-year period, following a heavy thinning which left 264 trees per acre, 4.8 cords of commercial wood were produced. An unthinned stand with 268 trees per acre grew only 3.6 cords. Light to medium thinnings produced 4.3 to 4.7 cords. Mortality has been deducted from these figures.

Probably the greatest gain from frequently repeated thinnings, is the salvage of potential mortality. The heavily thinned stand lost only .6 cords per acre in 6½ years, while the unthinned one lost 1.7 cords. The light and moderate thinnings lost .7 and 1.4 cords per acre.

It seems important to complete estimates of stands by tree vigor grade, prior to making thinnings or partial cuts. Both the marking and cutting jobs can be controlled in advance when the volume of low vigor trees is known.

The importance of the tree grading job is clearly indicated by the growth of progressive and regressive trees after thinning. High-vigor trees produced 70 percent of the pulpwood growth from 54 percent of the trees. Low vigor trees contributed only 3 percent of the growth from 10½ percent of the trees. Similar relationships occurred for trees of the dominant and suppressed crown classes.

Grafting Methods Used in Studies of the Littleleaf Disease of Shortleaf Pine

L. W. R. Jackson and Bratislav Zak

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THE SYSTEMIC nature of the littleleaf disease of shortleaf pine (*Pinus echinata* Mill.) (*1, 2*) has suggested the possibility that it may be caused by a pathogenic virus. All of the known virus diseases of trees can be transmitted by grafting an infected part of the diseased tree, such as a twig, stem, bark patch, or a root piece onto a susceptible healthy tree. From 1941 to 1947, the virus hypothesis was tested by a variety of grafts on seedling, sapling, and adult shortleaf pines.

Grafts made by a variety of methods have not yet demonstrated that the littleleaf disease is caused by a transmissible virus. However, the information obtained on the technique of grafting shortleaf pine may be of interest and value to other investigators.

Grafting Methods and Results

Stem and root parts of seedling, sapling, and adult shortleaf pines were successfully grafted by the bark patch and the approach grafting methods. A limited degree of success was recently obtained by the use of the cleft method for grafting adult shoots onto seedling stems. The results of the latter method will be published when further data are available.

The ages of the trees used in the grafting experiment were as follows: seedlings, 2 to 5 years; saplings, 10 to 18 years; and adult trees, 20 to 60 years. The term "stock" refers to the tree or tree part on which a scion or bark patch was grafted. In this experiment, the stocks were healthy shortleaf pine seedlings, saplings, or adult trees.

Bark-Patch Grafts

Several virus diseases of hardwood trees have been transmitted to healthy trees by bark-patch grafts, the virus that causes the phloem necrosis of elm (*3*) being an example. The method is an adaptation of the old and commonly used method of bud grafting hardwood species. Similar transmission techniques were included in this study. In the work here reported a bark-patch graft was made by first cutting a rectangular or diamond-shaped patch of living bark from the stock tree (Fig. 1, A, B, and C) and then replacing it with a patch of identical size and shape that was cut from another tree. Bark patches were cut so as to include a thin layer of rough bark, phloem, and cambium. In a special test, the bark patches were cut so as to include a thin layer of the underlying sapwood. Cutting the bark patches on the stems and large branches was facilitated by shaving off most of the rough bark with a drawknife. Bark-patch grafts were made during the spring season when the bark slipped freely.

Two methods were used for cutting bark patches. The early grafts were made with a bark-patch budding tool (Fig. 1, E). This instrument has four sharpened steel blades fastened to a metal block, with a short rounded handle. The blades form a rectangle ½ x 1 inch with a cutting depth of approximately ⅜ of an inch.

In the second method, a piece of sheet metal (Fig. 1, D and F) was used as a pattern for cutting the bark patches with a sharp knife. Two sharp-pointed pins soldered to the metal pattern held it in place on the bark while the cut was made. The patch to be grafted (Fig. 2, D, E, and F) was pressed firmly into the cut by placing on top of it the patch removed from the stock tree or a short piece of a small twig, and wrapping tightly with raffia or strong twine. It was found that the bark patches cut with a knife fit better than those cut with the budding tool. The bark patches on each stem, root, or branch of the stock tree were aligned in a single row. Finally, the grafted patches were coated with grafting wax. Chromate emulsion was also successfully used for coating the grafts, particularly the root grafts. It is very important to have the patches fit tightly in the cut, and pressed firmly against the wood during the union period. The grafts were examined for union after at least 3 months.

Throughout the experiment, the bark-patch grafts on saplings and adult trees were generally successful, as shown by the high percentage of

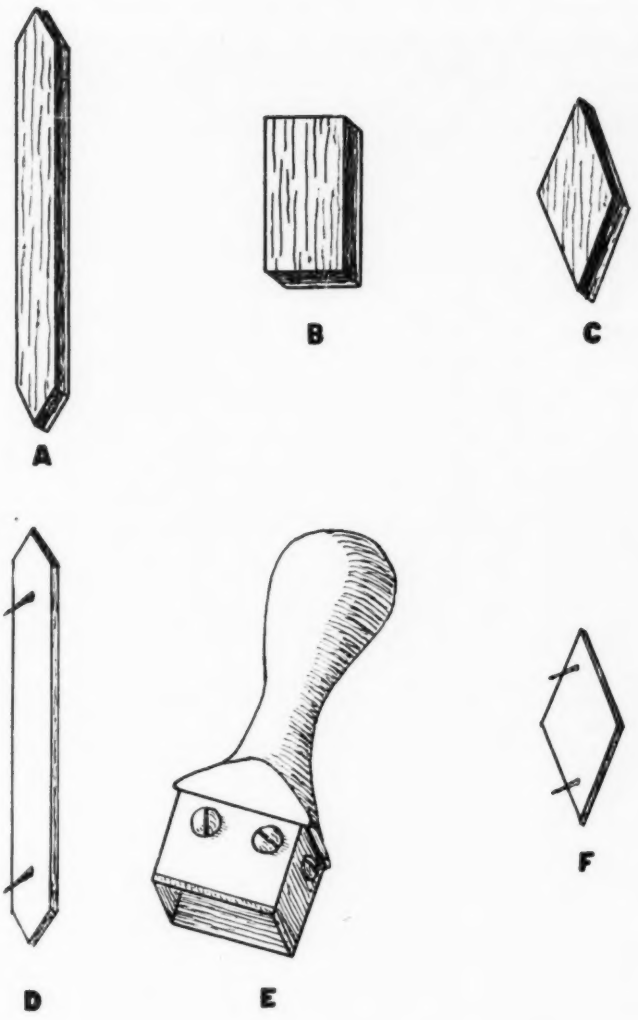

FIG. 1.—A, B, and C show shape of various types of bark patches used for bark patch grafts. D, E, and F show corresponding tools used for cutting the bark patches. Approximately ½ natural size.

unions listed in Table 1. With the exception of the special grafts in series 6, 7, and 11, the unions ranged from 19 to 100 percent for the bark patches from the diseased trees. In series 7 and 11, fewer patches grafted with a thin layer of underlying sapwood made union, probably because of the uncertainty in aligning the cambial layers. In series 6, the bark patches with attached twigs failed to unite. In series 3, the use of indole butyric acid to stimulate union failed to yield conclusive results. The union of bark patches from branches was 97 percent for those from diseased trees and 79 percent for those from healthy trees. The root-bark patch grafts were highly successful on roots, series 10, and on stems of saplings, series 12.

Approach Grafts

Grafting stems and roots by the approach method also yielded fairly high percentages of unions as shown in Table 2. With this method, it was possible to graft the roots of potted seedlings to the roots of adult trees. The stems of potted seedlings were also grafted on the stems of adult trees. The object of these tests was to determine whether symptoms of littleleaf could be induced in seedlings thus grafted on diseased trees.

With the stem-approach method, the stems of 2- to 5-year-old seedlings were grafted onto the stems of adult trees. Potted seedlings were placed at the base of the adult tree in such a manner that the seedling stem was parallel to the adult stem. Most of the rough bark of the adult stem was shaved off at a point about 3 feet above ground. A rectangular patch of bark about 3 inches long and the exact width of the seedling stem was cut out of the trunk of the adult tree. The seedling was prepared by cutting off the bark and a thin slice of the wood for a length of about 3 inches (Fig. 2, A, B, and C). The cut part of the seedling stem was then fitted tightly into the cut in the adult tree. The seedling stem was secured firmly in place with two double-pointed staples. A piece of inner tube rubber was placed under the staple to prevent cutting and strangulation of the seedling stem. Finally the grafts were coated with grafting wax. About 3 months lapsed before the grafts were examined for union.

With the root-approach method, the roots of potted 3- to 5-year-old seedlings were grafted successfully on the roots of adult trees (Fig. 3, A and B). By this same method the roots of diseased and healthy adult trees were successfully united. In the former, seedlings were selected which had a taproot or a lateral root at least 1 foot long and about ¼ inch in diameter. The 10-quart buckets used for potting the plants were prepared by cutting a 4-inch slit vertically from the base upward on one side. In potting the seedlings, the root was pulled out through the hole, which was then plugged with "rock wool." When the seedling was in proper position, the bucket was filled with soil. Potting was done during the late fall, and the seedlings were grafted the following spring. The root on the outside of the bucket was buried alongside a similar sized root of an adult tree and kept covered with soil until grafted.

TABLE 1.—RESULTS WITH BARK-PATCH GRAFTS

Series No.	Trees grafted		Total grafts		Union of grafts		Source of bark patches	Location of graft on healthy tree
	DxH[1]	HxH[2]	DxH	HxH	DxH	HxH		
	Number		*Number*		*Percent*			
1	2	—	4	—	100	—	Adult stem	Seedling stem
2	112	62	225	221	80	66	Adult stem	Sapling stem
3	4	4	16	16	19	87	Adult stem[3]	Sapling stem[3]
4	4	4	16	16	56	44	Adult stem	Sapling stem[4]
5	115	42	575	210	66	72	Adult stem	Adult stem
6	5	—	15	—	0	—	Adult stem[5]	Adult stem
7	10	10	49	50	8	0	Adult stem[6]	Adult stem
8	15	15	60	60	73	93	Adult branch	Sapling stem
9	6	4	145	80	97	79	Adult branch	Adult branch
10	27	15	128	77	95	95	Adult root	Adult root
11	5	4	20	17	0	0	Adult root[6]	Adult root
12	4	4	12	12	100	100	Adult root	Sapling stem

[1]Diseased on healthy.
[2]Healthy on healthy.
[3]Bark patches and cut surfaces painted with 200 ppm solution of indole butyric acid.
[4]Bark patches and cut surfaces on stock trees untreated.
[5]Twig attached to bark patch.
[6]Bark patch cut with 1/16 inch layer of wood attached.

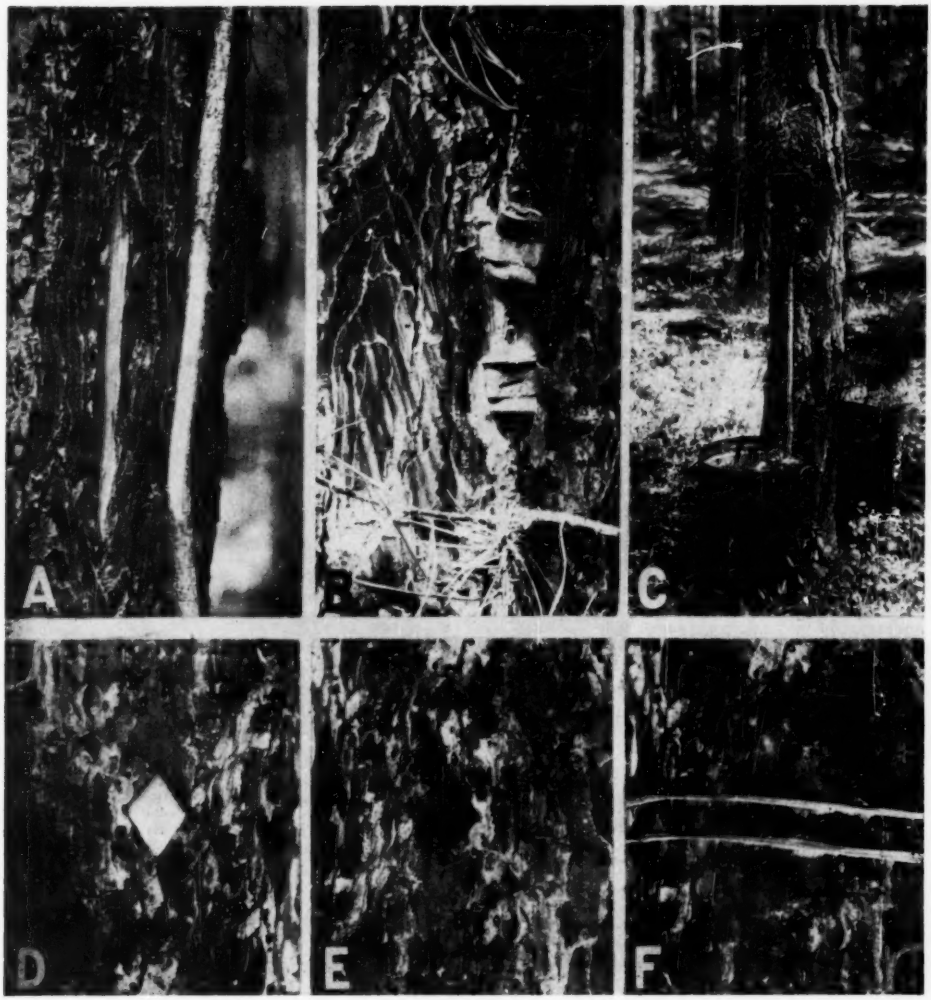

FIG. 2—A, B, and C show the steps in making stem approach graft. A, Cuts made on seedling and adult stems; B, Graft fastened and waxed; C, Stock seedling grafted onto scion adult. D, E, and F show steps in making a patch bark graft. D, patch lifted from stock stem; E, replaced with scion patch; F, completed graft, waxed and tied.

The root-approach graft was made by cutting from both roots a slice of bark and wood about two inches in length. The cut surfaces of the roots were pressed together, with their cambial zones aligned, and tightly wrapped with a heavy strip of inner tube rubber. The grafts were coated with a thick layer of chromate emulsion or grafting wax (Fig. 3, A). After one year the grafts were examined for union. The above procedure was also used for the intergrafting of the roots of adult trees.

The results of the approach grafts are shown in Table 2. In series 1, saplings growing naturally in the stand were grafted to the stems of adult trees. Fifty percent of the grafts on both diseased and healthy trees were successful. In series 2, the percentage of successful unions of potted seedlings grafted on adult trees was 78 percent for the grafts on diseased trees and 83 percent for the grafts on healthy trees. In series 3, the percentage of successful union of seedling roots grafted on adult tree roots was 55 percent for the grafts on diseased trees, and 36 percent for the grafts on healthy trees. As shown in series 4, a total of 9, or 26 percent, of the root-approach grafts between diseased and healthy adult trees were judged successful. One of these, which was accidentally separated when it was examined, made union for a length of one inch along one side.

Summary

A pathogenic virus has been suspected as a possible cause of the littleleaf disease of shortleaf pine. Transmission experiments were, therefore, begun early in 1940 with emphasis being placed upon grafting.

Both the above-ground parts and the roots of shortleaf pines were successfully grafted, with seedlings, saplings, and adult trees serving as stock trees. The bark-patch method proved highly successful and resulted in a high percentage of unions. The approach grafting method, although not quite as successful as the first method, did, nevertheless, give a fair percentage of graft unions for both stems and roots.

Thus far, healthy trees that received these grafts have not developed symptoms of the disease.

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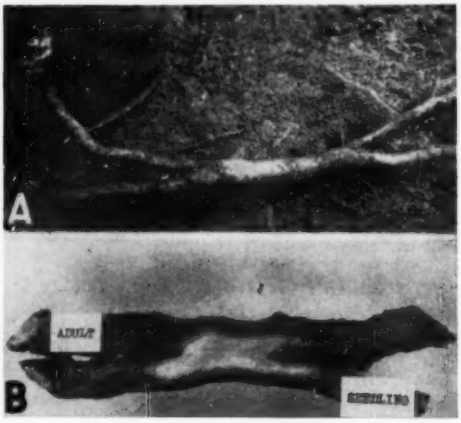

FIG. 3.—A and B show a root approach graft. A, Completed graft of a seedling root and adult tree root. B, Severed graft, showing positive union.

TABLE 2.—RESULTS WITH APPROACH GRAFTS

Series No.	Trees grafted		Total grafts		Union of grafts		Character of grafts
	DxH[1]	HxH[2]	DxH	HxH	DxH	HxH	
	Number		*Number*		*Percent*		
1	8	6	8	6	50	50	Adult stem to sapling stem
2	70	30	70	30	78	83	Adult stem to seedling stem
3	11	11	11	11	55	36	Adult root to seedling root
4	28	7	35	9	26	0	Adult root to adult root

[1]Diseased on healthy.
[2]Healthy on healthy.

The Effects of Deer on Conifer Reproduction in Northwestern Montana[1]

A winter deer range in Montana was studied to determine the extent of deer browsing on conifers. The winter range lies in a zone of tension between ponderosa pine and Douglas-fir, the pine being greatly superior in economic value but weaker in competitive ability. Although both species are browsed heavily, the deer show a marked preference for the pine. Remedial measures suggested are: (1) Improve the competitive status of the pine by silvicultural practices such as seed-bed preparation; (2) improve deer range conditions by adjusting deer numbers to allow recovery of broadleaf browse species; (3) plan timber cutting practices to benefit deer range whereever possible.

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THE WINTER range of white-tailed deer (*Odocoileus virginianus*) on the Fisher River in Lincoln County, Montana, occurs in a timber stand which at present is dominated by ponderosa pine (*Pinus ponderosa*). This pine is the most valuable timber species in the area and it is desirable to keep it in its dominant condition. However, there is evidence that the pine is being rapidly replaced by Douglas-fir (*Pseudotsuga taxifolia*), which is locally an economically inferior species. In view of the extensive deer browsing on conifers in this area, silviculturists have asked if deer may be exerting some influence on the forest composition detrimental to the pine.

The browsing of conifers by deer is not unusual. Dixon (*4*) lists fifteen species of conifers in the diet of the California mule deer (*Odocoileus hemionus*). Two of these, ponderosa pine and white fir (*Abies concolor*), are considered of outstanding importance in the deer diet. Aldous (*1*) reported the browsing by white-tailed deer of all three pines—jack pine (*Pinus banksiana*), white pine (*P. strobus*), and red pine (*P. resinosa*)—occurring on the Superior National Forest in Minnesota. White cedar (*Thuja occidentalis*) is a staple in the diet of white-tailed deer in the winter deer yards of the Lake States (*2*). Petrides (*9*) lists several conifers as emergency winter browse in central New York. Included are hemlock (*Tsuga canadensis*), white pine, red pine, and Scotch pine (*Pinus sylvestris*). Hill and Harris (*5*) and Hill (*6*) found ponderosa pine and ground juniper (*Juniperus communis*) in the stomachs of mule and white-tailed deer in the Black Hills. Palmer (*8*) lists four conifers in the diet of the Sitka black-tailed deer in Alaska—western red cedar (*Thuja plicata*), Alaska cedar (*Chamaecyparis nootkatensis*), western hemlock (*Tsuga heterophylla*) and mountain hemlock (*Tsuga mertensiana*). Cowan (*3*) reported heavy use of Douglas-fir by Columbian black-tailed deer on Vancouver Island, British Columbia.

The importance of conifers in deer diets varies greatly from the highly favored white cedar in the Lake States to those species which are eaten only rarely. Likewise, the effects of deer browsing on conifers vary, both with the intensity of browsing and with the resistance of the trees to the effects of browsing.

The relative palatability of ponderosa pine and Douglas-fir in Montana has not been reported. They are generally believed to be low in palatability and their use is regarded by many as an indication of degraded deer range. This is considered to be true more of the pine than of Douglas-fir.

Several of the authors quoted have reported damage to conifer reproduction resulting from deer browsing. It is the purpose of this study to determine the extent of browsing and its effects on the forest composition of the Fisher River winter deer range in Montana.

It is not the purpose here to report on the silvicultural influences other than deer, which may have helped to cause adverse conditions in the pine-fir forest. It is recognized that the relative rates of seed production of the pine and Douglas-fir, their relative tolerance of seed-bed conditions, their shade and root competitive ability, site adaptability, relative survival through the pole stages, and similar factors, all affect their relative abundance. But only the influence on reproduction caused by deer browsing is reported.

The number of deer on the Fisher River winter range has been variously estimated at from 3 to 10 thousand. Bealey and West (1935 Ms.)

[1]Valuable assistance was given by Russell K. LeBarron, Arthur L. Roe, and Austin E. Helmers of the Northern Rocky Mountain Forest and Range Experiment Station.

estimated the population at 4900 white-tailed deer. Drumheller (1936 Ms.) estimated 3100 deer. The current study (1946-47) included a strip census of representative parts of the winter range. This census was conducted by personnel of the U. S. Forest Service and the Montana State Fish and Game Department as well as the U. S. Fish and Wildlife Service. The latter count gave a population figure for white-tailed deer of 9800. Strip census the following winter (1947-48) by the State Fish and Game Department gave an estimate of approximately 7000 white-tailed deer (Montana Fish and Game Commission, 1948). Apparent inconsistencies in the above figures may be attributed to the fact that the counts were made independently, using different techniques and different delimitations of winter range, and under varied conditions of deer concentration caused by varying weather conditions. It is generally agreed by all who have intensively studied the area that the winter range is over-utilized and in a degraded condition. It is estimated that at the time of the census in February 1947, deer occurred throughout the winter range in concentrations averaging 1 deer per 2.4 acres.

Study Methods

To acquire the desired information on the extent to which deer were browsing the pine and Douglas-fir, 704 4-milacre plots were mechanically selected throughout most of the winter range. The plots were located at 4-chain intervals along line transects ¼ mile apart. For the purpose of this study, the areas considered to be winter deer range were the warm, south-facing slopes with a forest overstory composed predominantly of ponderosa pine. These areas are irregular in shape, usually lying along the lower ends of tributary drainages, either in isolated tracts or coalesced with neighboring wintering grounds. On each study plot a record was made of the number of conifer stems by species and the extent of browsing currently and in the past, on terminal shoots and on general foliage. Similar records of browse species other than conifers were made and will be reported later. The plots were examined in March and April after practically all the winter browsing was completed.

Forest Conditions

As the 4-milacre size plots were studied, larger plots (1/100-acre) were studied also with regard to the overstory consisting of trees 12 inches d.b.h. and larger. The pine occurred at the rate of 17.4 trees per acre, Douglas-fir at 9.0 trees per acre, and western larch and lodgepole at 4.7 and 3.3 trees per acre, respectively. In the reproduction-size class (3 inches d.b.h. and smaller) 20.9 percent of the 4-milacre plots bore ponderosa pine while 43.1 percent bore Douglas-fir. Stated in different terms, the overstory on the winter range is 65.9 percent ponderosa pine, 34.1 percent Douglas-fir, 13.7 percent western larch, and 9.6 percent lodgepole pine. Beneath this overstory most of the reproduction is composed of ponderosa pine and Douglas-fir of which only 32.6 percent is pine and 67.4 percent is fir. Obviously the extent of ponderosa pine reproduction is not commensu-

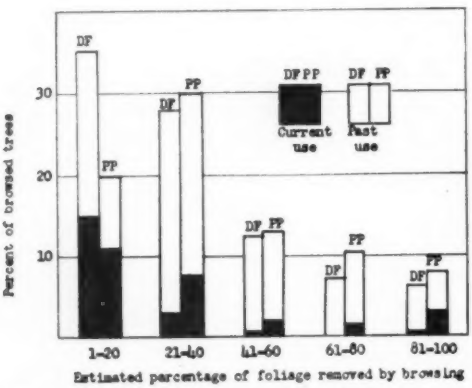

FIG. 1.—The relative intensity of use (estimated percentage of foliage removed) of the ponderosa pine and Douglas-fir browsed by deer.

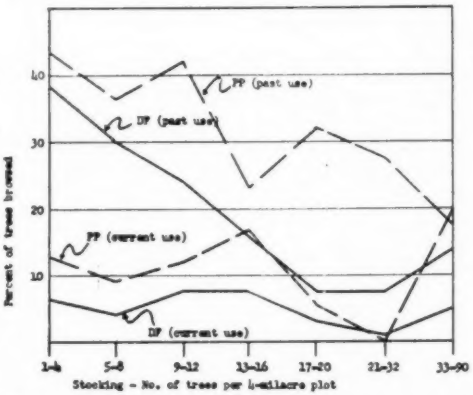

FIG. 2.—The rates at which ponderosa pine and Douglas-fir are browsed in relation to stocking.

rate with the stocking of the mature stand and is inadequate to maintain the species.

Browsing on Pine and Douglas-Fir

General foliage.—The extent of browsing on the pine and Douglas-fir 10 feet or less in height is shown in the accompanying graphs. Calculations are based on a sample of 1389 Douglas-firs and 257 ponderosa pine. For each tree encountered on a sample plot, an estimate was made of the volume of foliage that had been removed currently and in the past. This estimate was made to the nearest 10 percent in the field and grouped by 20 percent intervals in Figure 1, which shows the relative intensities of use of ponderosa pine and Douglas-fir. Percentages in Figure 1 are based on only those trees that were browsed. A total of 37.5 percent of all pines showed past browsing. Only 21.2 percent of the firs showed like use. Ten and one-half percent of the pines were browsed currently as compared with 4.4 percent of the firs. The average intensity of use was greater in pine than in fir. Pine showed an average past use intensity of 38.9 percent. That of Douglas-fir was 32.3 percent. The averages for current use of pine and Douglas-fir were 33 percent and 17.1 percent respectively. In addition to these use-intensities, 3.4 percent of the pines were found dead from browsing. Only 0.8 percent of the Douglas-firs were dead.

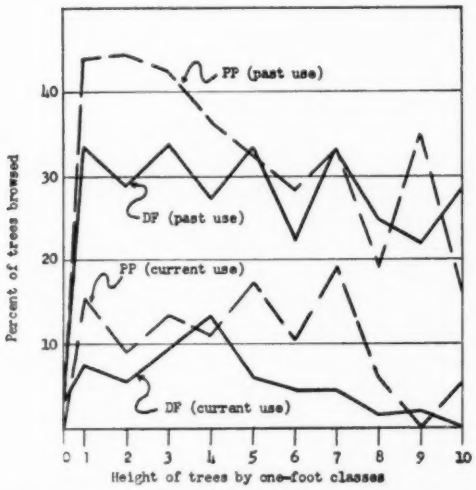

FIG. 3.—The rates at which ponderosa pine and Douglas-fir are browsed in relation to height.

The density of the stand influenced the general use of both species of trees (Fig. 2). The trees on lightly-stocked plots were more heavily browsed than those on densely-stocked plots. At all stocking levels, the pines were more intensively browsed than the fir. (A minor exception to this is the current browsing in the 21-32 stocking class in which Douglas-fir shows greater use than pine.)

The height of the trees exerted a noticeable effect on browsing (Fig. 3). Plants 0-6 inches in height were browsed very little. This may be attributed to two things: frequently the small seedlings were covered with snow or vegetation and so overlooked by the deer; or, when deer did eat these small trees they may have taken the entire stem, leaving no trace, or so much of the stem that the remnants were overlooked by the investigators.

Browsing was markedly greater on trees of the 1-foot class than on those of the 0-foot class. In current use the browsing increased to the 4-foot class in Douglas-firs and the 7-foot class in pines and then declined to a low rate in the 10-foot class. Past use was greatest in the 1- to 3-foot classes and declined slowly to still relatively high rates in the taller classes. At most height classes the preference is for pine.

Terminal shoots.—Perhaps the most severe influence of browsing on reprduction is the removal of the terminal shoot. This removal checks the vertical growth of the tree, an important factor in the tree's potential ability to overtop and compete with adjacent trees. The use of terminal shoots by deer was therefore recorded separately from measurements of general browsing. For

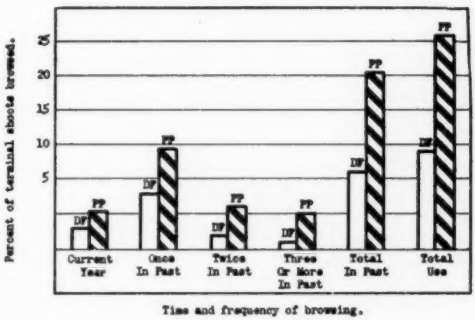

FIG. 4.—The percentage of ponderosa pine and Douglas-fir terminal shoots browsed by deer, with regard to current use and degrees of past use on the Fisher River winter range.

each tree up to 10 feet in height encountered during the study, a record was made as to whether the terminal bud was removed during the current browse season, once in the past, twice in the past, or three or more times in the past. Figure 4 shows the percentage of trees with the terminal shoots removed by deer under these four classes. Under current use, ponderosa pine shoots were removed at a rate 117 percent greater than those of Douglas-fir. Of the trees with terminal shoots removed once in the past, the rate for pine was 107 percent greater than that for Douglas-fir. Of those trees with the shoot browsed twice in the past, the pine was used at a rate 300 percent greater than the fir. A similar comparison of trees browsed 3 or more times in the past shows a 367 percent excess of pine use. Twenty-eight percent of the pines showed past damage of all classes, while only 11 percent of the Douglas-firs showed past damage.

It is a question whether this greater use of pine may be a result of the fact that the Douglas-fir occurs in denser stands into which the deer do not go to browse. Table 1 shows that a greater percentage of pine than Douglas-fir occurs in light stands (first three classes), and conversely, er percentage of pine than Douglas-fir occurs in denser stands (last three classes). That this tendency toward denser stocking has not particularly benefited the Douglas-fir is demonstrated by Figure 5, which shows that the pines had their terminal shoots browsed at a consistently greater rate regardless of the stand density. It is significant that a large proportion of the pines occur in lightly stocked plots. This indicates a better spacing of pines than Douglas-firs but it also follows that more of the well-spaced pines (the most important stems) are being damaged than are the well-spaced Douglas-firs.

The effect of height on browsing of the terminal shoot is comparable to its effect on browsing of the general foliage, only more pronounced. As trees grow out of reach of the deer, the terminal shoots are protected from browsing (Fig. 6). Terminals were browsed currently from Douglas-fir trees up to 6 feet in height; from pine up to 7 feet. The greatest current use of Douglas-fir terminals occurred in the 1- to 4-foot classes and of pine in the 1- to 3-foot classes. The greatest past use for both species was in the 1-foot class. In nearly all height classes, both current and past browsing was greater on ponderosa pine than on Douglas-fir.

Discussion

In general, it can be said that the deer showed a marked preference for ponderosa pine as compared with Douglas-fir. In the silvicultural condition that exists on the Fisher River, where the economically superior species is being inadequately restocked, any suppressive force which adversely affects the pine more than the Douglas-fir must be considered detrimental. The deer browsing, which is more severe on pine than on Douglas-fir, is therefore a detrimental influence.

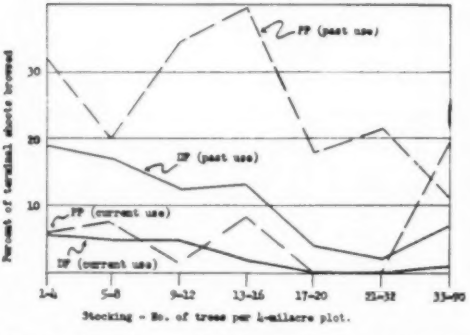

FIG. 5.—The rates at which ponderosa pine and Douglas-fir terminal shoots are browsed in relation to stocking.

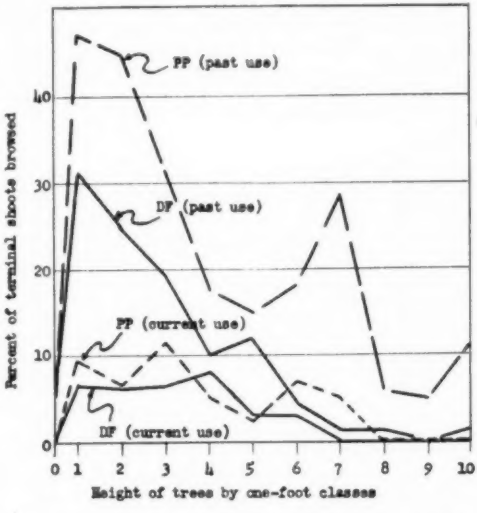

FIG. 6.—The rates at which ponderosa pine and Douglas-fir terminal shoots are browsed in relation to height.

TABLE 1.—RELATIVE STOCKING DENSITY OF PONDEROSA PINE AND DOUGLAS-FIR

Stocking number of stems per 4-milacre plot	Percentage of ponderosa pine		Percentage of Douglas-fir	
1- 4	19.0	58.5	16.5	47.5
5- 8	24.5		17.5	
9-12	15.0		13.5	
13-16	8.0		8.0	
17-20	12.5	33.5	12.0	44.5
21-32	10.5		14.0	
33-90	10.5		18.5	

The fact that deer are adversely influencing ponderosa pine reproduction may appear as a direct conflict between the interests of sportsmen and lumbermen. Must the pine timber resources be sacrificed to deer on the Fisher River winter range? Or should the deer be eliminated there in favor of the pine? Probably neither of these courses is necessary or desirable. It has already been mentioned that many factors other than deer browsing may be adversely influencing the pine. Conceivably the deer are detrimental only because their influence is exerted *in addition to* those other adverse factors. Perhaps relief from those influences would result in reproduction sufficiently abundant to withstand the effects of browsing. Methods for overcoming the silvicultural problems of ponderosa pine, however are only now in the earliest stages of experimental investigation. Until such methods are developed for use on a practical scale, the idea of relief from deer damage will continue. At the same time, it is likely that deer can be diverted from the intensive use of conifers by improved management. Probably much of the browsing on conifers results from the fact the large deer population has used its winter range so heavily that a great number of the more palatable browse plants have been suppressed or killed, forcing the deer to turn to less palatable plants such as the conifers. Data on the condition of the winter range were accumulated during the present study and will be reported later. Meanwhile, it is apparent from the general appearance of intensively browsed important food plants, such as serviceberry, that the winter range is overused. Proper management of the deer can relieve this condition of overuse and restore palatable plants to such abundance as to reduce greatly the need for browsing on conifers. It is important to realize, however, that much information is needed to guide deer management properly. It is not just a matter of improving the range, which would be complex enough in itself. Consideration must be given the effects of the timber cutting which will occur on a wide scale on the Fisher River winter range during the next several years. No one knows just what the timber cutting will do to the deer range, nor how it can be done to disrupt the deer least and benefit them most to the end that their browsing will be least destructive to the forest. Certainly there will be almost innumerable ways in which timber management and deer management can be practiced for the benefit of both resources. The only way these desirable practices can be understood and properly effected is through practical cooperation and study by the sportsmen, lumbermen, and the conservation agencies concerned. Efforts to that end have already been instituted by the Montana State Fish and Game Department and the U. S. Forest Service. Under cooperative agreement these agencies have established a demonstration management and research project to coordinate deer and timber management on the deer range described above.

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Notes

Prefabricated Semipermanent Circular Corn Crib

The lack of adequate storage facilities for the Midwest's 1949 bumper corn crop has created a serious problem. In an effort to help alleviate this and future storage problems, C. S. Walters of the Department of Forestry and J. G. Andros of the Department of Agricultural Engineering, University of Illinois, have developed a corn storage structure which can be fabricated and erected with common hand tools and jigs. Construction and testing of the crib were in cooperation with Sinnissippi Forest, Oregon, Ill.

The unit is constructed of native hardwood lumber, all sizes of which are readily available at the small sawmill, or can be sawed from logs cut from the farm woodland. The crib is 16 feet (approximately) in diameter and 12 feet high. It has a storage capacity of approximately 1,000 bushels. It consists of a floor with a sheller drag chute, 16 wall sections, a ventilating flue, and a roof. Space for a door is provided in one of the wall sections.

Each of the wall sections consists of 15 pieces of No. 9 gauge galvanized wire stapled horizontally to six 1 by 4 inches by 12-foot vertical boards spaced 2 inches apart. Each wire is looped at both ends and is fastened to the boards with ⅞-inch galvanized poultry netting staples. The crib is erected by standing the wall sections into place on the circumference of a circle approximately 16 feet in diameter and bolting the wire loops of adjacent wall sections together with 1 by ¼-inch machine bolts and washers. Each section is kept erect by board cleats nailed to the floor at its base; and at its top by a 1 by 4-inch by 7½-inch board, one end of which is nailed to the top of its middle vertical board, and the other end, to the top of the ventilating flue.

The crib contains 1,720 board feet of lumber, and the total cost for materials is approximately $150 (lumber at $75 per MBM). It is believed that the crib will be serviceable for many years, depending on the maintenance it receives. The crib has been designed so as to conform with the Production and Marketing Administration's (Commodity Credit) requirements for the storage of ear corn.

In addition to providing another method by which the farmer may help to solve the corn storage problem, this unit lends itself to prefabrication and sale as a package unit by the small sawmill owner. Detailed plans are available from the University of Illinois College of Agriculture, Urbana.

DONALD A. KULP,
Illinois Agricultural Experiment Station.

Books Wanted for Israel Forestry Library

Last Spring the JOURNAL OF FORESTRY carried a news item concerning the request for forestry publications for the Israel forestry library.

When I was in Israel this past spring, A. Y. Goor, conservator of forests, asked me to coordinate any donations which might be forthcoming. Then, too, there was the question of handling the shipping of the publications.

If those foresters or others who have books or other publications which they would like to donate to the Israel forestry library would send me a list of the publications they have available, I can then determine whether those particular books or other pieces of literature have already been donated. I will let the party know whether copies are desired, and they can be shipped to me in care of the U. S. Forest Service, 623 N. Second Street, Milwaukee, Wis. The Zionist Organization of America, Milwaukee chapter, will pay the shipping charges.

Israel has some fine forests. An inspiring planting program is in progress and has been for the past 20 to 30 years. Several hundred individuals in the various settlements are looking to this Israeli forestry library for information about trees and forests. They now have several thousand pieces of literature which will soon be housed in a new library building at Kadimah, half way between Tel Aviv and Haifa. Any and all donations will be gratefully appreciated. It may be that individuals, schools, and other libraries may have some outdated copies which would be thankfully recived by the Israeli.

HYMAN M. GOLDBERG.

Rapid Form Class Diameter Measurements

R. M. Godman's notes concerning the pole diameter tape in the JOURNAL OF FORESTRY for July 1949 (pp. 568-569) bring to mind an instrument conceived while at the Northeastern Forest Experiment Station, Philadelphia, Pa., for the rapid determination of the form class diameter measurement at the top of the first 16-foot log.

An experimental model of the instrument worked well enough to warrant further study and experimentation.

The instrument is simply two separate optical systems each utilizing the principle of stadia to obtain the two critical measurements of the form class (Fig. 1).

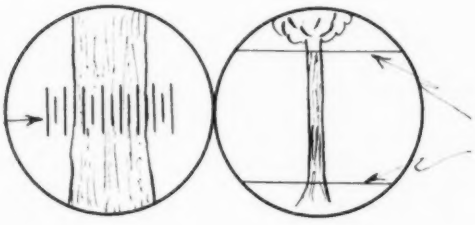

FIG. 1.—Two separate optical systems utilize the principle of stadia to measure form class. *Left*, mill scale. *Right*, preset cross-hairs indicate 17.5 foot height at distance of 25 feet from the tree.

When in use, a constant distance is measured from the base of the tree (Fig. 2). At this distance, the two preset cross-hairs of the right optical system indicate the 17.5-foot measurement. The other optical system (using some magnification) uses a standard military mil scale (standard in many military binoculars) to measure the diameter of the tree at 17.5 feet above the base of the tree.

Measurements obtained in this manner may not be as accurate as those taken by either pole calipers or pole tapes, but vastly more measurements may be taken in a day, the equipment weighs practically nothing and occupies very little space, and measurements so gathered lend themselves readily to statistical treatment and analysis.

FRED J. HARTMAN,
Brookmont, Md.

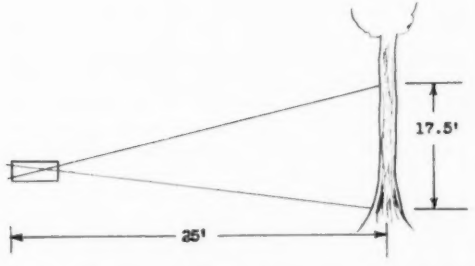

FIG. 2.—The instrument, set at a constant distance from the tree, indicates the diameter 17.5 feet above the base.

Erratum

In the Proceedings of the Society meeting at Boston, December 1948, these minor corrections should be made in the Editor's Note following Walter Mulford's paper, page 337.

The total number of students of professional forestry registered in the (old) College of Forestry of Cornell University was 114, not 97.

In the second and third columns of the table, the names, by classes, should be as follows. F. E. Degree: 1902, Clark, W. W., Sterling, E. A.; 1903, Craig, R. D., Williams, A. S.; 1904, Bristol, H. R., Dunlap, Frederick, Lull, G. B., Lyford, C. A., Margolin, Louis; 1906, Worthley, I. T.; 1907, Shepard, Ward C.

RALPH S. HOSMER.

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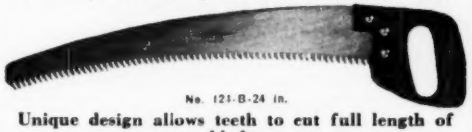

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Points of View

Comments on H. H. Chapman's "Showdown on Federal Forest Regulation"

Prof. Chapman is always at his best when lashing out on a subject about which he feels strongly. His scholarly article on the cattlemen's raids on public grazing lands published some months ago in the JOURNAL stands in contrast to his recent blast on the Anderson Bill (S. 1820) on public regulation of timber cutting. He tells only the story of the opponents, but leaves out the very real case to be made for some public control over actual forest destruction.

In spite of vast strides made in recent years in establishing minimum silvicultural standards on larger ownerships in particular, the preponderance of clearcutting and high grading on most logging operations continues unchecked. This is particularly the case in the East, South, and Lake States where second growth forests and small scattered ownership are the largest portion of forest holdings.

A few of the states have enacted minimum cutting laws in an attempt to protect the public investment already made in fire protection to bring these young forests to maturity. Fragmentary research and observation indicate much noncompliance and little effort toward enforcement in some states—"legalized clearcutting" as one author puts it.

In his position as a professor-emeritus one might hope that Chapman's long years in forestry would provide him with some constructive suggestions, but one looks in vain to find his efforts toward constructive workable state regulation. Like so many opponents to federal forest regulation, he offers state regulation as an alternative but when the threat of federal control subsides his efforts do likewise. I am sure that he further weakens his case when he uses such scare words as "mailed fist" and "totalitarian authority." The Forest Service would be derelict in its duty of public trust if it failed to encourage legislation designed to correct definite problems revealed by objective research. Legislation which is subject to democratically elected legislatures can hardly be called dictatorial. If it will stop widespread clearcutting and high grading, why does so great a forester as Mr. Chapman oppose it?

Certainly Mr. Chapman and the powerful industrial groups lined up to oppose federal regulation could, if they wished to prove the sincerity of their arguments, "quit shilly-shallying" and put through some really adequate state regulation. But too often when state regulation comes up for consideration, these same groups amend these bills to death. It is no secret that legislatures and conservation departments are often subservient to dominant industrial groups.

Yet some action must be taken. The American Forest Congress in its program of three years ago endorsed state regulation, but action has been notably lacking. There is a recognition of the need for curbing the worst effects of commercial cutting because "education" alone cannot cope with them. Why there should be any industrial opponents to effective woods regulations is hard to explain in view of their widespread devotion to sound forest practices so prominently displayed in news releases. No forest cutting control measure yet proposed would have any retarding effect on the really sincere forestry efforts made by so many concerns.

As an alternative to Chapman's proposal for a secret ballot of S.A.F. membership in the Anderson Bill for public regulation, I should like to suggest that the sentiment of the Society be tested first, on the principle of public regulation which has already been endorsed by the Council; secondly, on the desirability of state versus federal regulation. To ask for a vote by the Society on any one bill in its introduced form would be meaningless since the bill will probably be amended considerably before a vote of Congress is taken.

This vote will be a real test of forestry as a profession. It will indicate, among other things, how well we can distinguish the whole American forest situation from the individual trees under our immediate supervision. It will show how foresters as custodians of a great natural resource view a great historical problem: How can a democratic society discipline itself sufficiently in resource conservation to assure future generations the abundance of resources so essential to the maintenance of democracy?

CHARLES H. STODDARD,
Consulting Forester,
Duluth, Minnesota.

Society of American Foresters Policy On Regulation of Private Forest Management

At a meeting of the Council of the Society held in Washington, D. C., in December 1940, the following statement of policy was adopted, and published in S.A.F. Affairs for April 1941.

In a referendum held October 14, 1944 this statement was approved by a substantial majority vote of the membership. Accordingly, this statement continues to be the Society's official policy with respect to public regulation of private forest management.

HENRY CLEPPER,
Executive Secretary.

In view of the importance of the subject of public regulation of privately owned forest lands, now being actively discussed throughout the country, it is timely to clarify the position of the Council in respect to this subject.

We endorse in principle public regulation to the extent necessary in each local situation to prevent destruction of forests and to keep forest lands reasonably productive. We believe that in the long run this will promote the public interest and the welfare of the forest industries.

Public regulation, as we conceive it, would insure a seed supply to reforest lands and prevent unnecessary destruction of reproduction and immature trees; prevent clearcutting of forest lands without prompt reforestation either by natural or artificial means; prevent the use of the more destructive logging methods and equipment; prevent soil erosion; prevent excessive grazing on critical run-off, erosion and forest reproduction areas; afford adequate control of fire and of plant pests; provide for any other simple silvicultural measures needed to keep lands reasonably productive; insure reasonable watershed protection; help to safeguard local communities and furnish necessary forest products for local and national use, including national defense.

Furthermore, these requirements will have to be localized and adapted to the situation in which they are to be used and they cannot be uniform in character for entire states or forest regions or for the entire country.

To insure flexibility, adequate provision for approval of special cutting and other practices for individual tracts must be made, and the owners of such tracts should be permitted to prepare such plans themselves always provided the practices called for do not fall below the level sufficient to prevent destruction of forest and keep lands reasonably productive.

We believe that public regulation should be founded upon an educational approach and constructive cooperation between public agencies and land owners.

This statement of the Council's position must not be interpreted as endorsement now or later of any bill which may be introduced. We urge the members of the Society to scrutinize carefully and be prepared to criticize constructively all legislation proposed in order that our profession may contribute to the fullest its knowledge and experience.

Forest Taxation

The September issue, 1949, page 782, "Red Tape Hampers Owners of New England Timberland," prompts me to say that we as foresters are neglecting the whole issue of timberland taxation, one of the most important factors in forest management.

As foresters we should never agree to anything just because it is possible politically, or the best which we can probably expect legislatures to adopt. Professionally, our function must go much further. We must support the ideal course, the one which is just and fair in comparison with other real-estate owners, but which does not allow timberland owners to be penalized.

By default we are allowing the taxation of the timber crop itself to be recognized, and to be fixed in the statutes. Too few foresters pay attention to the taxation problem, or do original thinking about it. This is true in your country as it is in Canada.

A timber crop should bear no taxes.

No farmer would stand for the payment of a part of his crop, a fixed percentage, to the taxgatherer. The collective farms of Russia pay such taxes, but they are incredible on this continent.

Yet when anyone, including the same farmer, walks through a well-managed area of timberland he thinks immediately that such a crop, being obviously a valuable asset, should be assessed and taxed. Most foresters seem to be following the same thinking. Or they are not thinking.

The timber standing in plain sight, and which anyone admits has a value, is the accumulation of several or very many annual crops. The fact that it is there serves to emphasize the chief difficulty in forest management, that is the time element. The annual growth of years must be accumulated on any tree before it becomes merchantable.

Therefore, if we look at the ability to pay, which is a prime factor in taxation, it is clear that if crops are to be taxed it is more practical, also more fair, to tax annual crops first, tree-crops should be taxed only after annual crops are taxed.

Further reasons could be produced, among the constant risk to which tree-crops are exposed over the years before they can be harvested; and the cost of fire-protection, insect-protection, etc. which do not affect farm crops,

or other real-estate investments, to the same degree.

The taxation of forest land must come down to some such simple principles as the following:

1. Assessment on basis of the present worth of future crops, using an interest rate not less than 5 percent and reducing the amount by a percentage similar to that used for other forms of real-estate in the same district.

2. Apply the same mill-rate as is applied to other real-estate in the same district. This gives the gross annual tax.

3. In order to bring forest real-estate to the same level as other real-estate, make the following deductions from the gross tax:

(a) Allowance for cost of fire-protection.

(b) Allowance for un-insurable risk.

(c) Reduction for services not supplied, where this is applicable. This may mean roads, which other real-estate owners receive for a part of their taxes. It could include police and other services.

Without a kick, foresters are now accepting the principle that after land-taxes are paid annually, the taxing authority is doing them a favor to postpone the tax on the crop until it is cut (a yield-tax) whereas such a tax is iniquitous and should never be collected. Read Fairchilds on yield-tax, and there is a further reason which he did not mention, namely, a yield-tax limits the intensity of possible forest management.

I would like to see the S. A. F. discuss this important subject most fully.

JOHN D. GILMOUR,
Montreal, Canada.

Know Your Forest Soils

The comments of William T. Saverwein, Soil Conservation Service forester, in the August issue of the JOURNAL, entitled "Know Your Forest Soils," were appropriate and helpful to many young foresters, not only those working with farmers on small holdings, but foresters who manage large holdings of many thousands of acres.

As a forester working in the Piedmont section of Virginia for the Virginia Forest Service, I wish to add the following comments. What I say will apply to all foresters working in the field of forest management.

I am associated, and come in contact, with many foresters young and old and all are agreed that the one subject in which forestry schools are relatively weak in teaching, for practical field work, is soils. Most forestry schools teach the course called forest soils, but usually it is nothing more than an introductory course. If an advanced or improved forest soils course was required of all forestry graduates, young foresters would be in a better position to start practice in the field.

After three years of experience in marking and estimating mature timber in the Piedmont area, I have observed many correlations between soils and timber growth, especially defect resulting from fungus within. On many of the poorer productive soils through the Piedmont woodlands, we know approximately what percentage of decay will be present on a given area, by knowing the past history of a forest track and whether a fire has burned over the area to cause fire scars sufficient to create openings for fungus to enter the wounds. On these fire scarred areas, where fires have burned twenty to forty years past, one can expect to find defective timber on poor soils. Often the defect will make the butt log a cull, and the second cut will be of a low quality due to a doty heart. If the fire scars are old enough the defect will, in many cases, run the entire length of the tree. The exact opposite exists on areas that were burned during the same periods, where the soil is of a high productive type. There the soil types fall between the poor and high quality types.

Two examples which illustrate this point are found on marked timber tracts, in the mixed oak type.

Tract I contained timber approximately 80 years of age, on a good soil type in the Davidson series.

Tract II contained timber approximately 90 years of age, on a low productive soil type in the Tatum-Nasom series.

Both tracts had been burned approximately 35 years before the harvest cut made in 1948; all wounds had healed over and were practically invisible from the outside. The oak species on Tract I averaged 24 inches d.b.h. On Tract II the oak species averaged 18 inches d.b.h. The defect in the trees on Tract I cut out in most cases by cutting off 2 to 4 feet of the butt log. On Tract II the entire first 8 feet of the butt log were cull and in some instances the first 16 feet were unusable for sawlogs. The percentage of

defect on Tract I is estimated to be 2 to 5 percent of the total tree volume. Tract II contained an estimated 20 to 30 percent cull material.

If foresters know their soils, allowances can be safely made to compensate for these conditions.

The Soil Conservation Service and the foresters of the Virginia Forest Service work together on conservation management plans for farms. We arrange periodical field trips with the S.C.S. so that all foresters can learn to identify the soil of their immediate areas.

When a forest landowner requests forestry assistance, it is known many times before the examination is made what to expect on the particular property in question by knowing the location of the tract and the soils in the area.

It is useless to try to grow large, high quality sawlogs, veneer, and other forest products under a reasonable rotation on a poor productive soil. Many an error is made by foresters telling the small forest owner to grow quality sawlogs on soil types when the crop should be a shorter rotation for mine props, pulpwood, and cross ties. Timber growing is like any other crop, one must manage it for the soil that he has to work with.

All foresters should recognize the importance of the soil types and work in close harmony with the Soil Conservation Service to become more familiar with the soil types of the area he is interested in.

DALLAS G. WILFONG, JR.,
Virginia Forest Service.

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We Present

J. Brooks Toler (1906-1949)

In July 1929, fresh out of the Yale School of Forestry, I signed on as a lecturer and motion picture operator with the southern educational project of the American Forestry Association, cooperating with the Mississippi Forestry Commission. Ordered to report for duty to Brooks Toler, my supervisor, in the Edwards Hotel in Jackson, Miss.—that well-known hostelry where more state laws are made and broken than on Capitol Hill—I was greeted by a smiling young man whose beaming juvenile countenance, I soon discovered, was a sort of disarming and ingenious mask for an oak-hard core of determination and fixity of purpose. Thus began a long and cherished friendship which persisted—despite many hot disagreements about forestry matters—for twenty years.

Mississippi officially started her forest conservation program with the establishment of a Commission of Forestry in 1926. Two years later, the American Forestry Association's southern educational project was launched in the state. Forestry has come a long way since that summer of 1928 when Brooks Toler started giving picture shows and lectures to Mississippi citizens, mostly in remote back-country communities barely accessible by mud roads, who trudged by the thousands on foot, or journeyed on horse and mule-back, by wagon, and model T Fords to see the free pictures and to hear for the first time the new word forestry.

At least ninety percent of those who attended the shows not only believed in annual woods burning, but actually participated in this old southern custom which had become sanctioned by tradition. But not until 1930, when Brooks was appointed a district forester by the State Forestry Commission, did he fully comprehend how strongly the people of the open range, longleaf pine area believed in burning off the woods. His predecessor had been a two-gun forester, but Brooks, a firm believer in the power of words over bullets, soon was applying his amazing gifts of eloquence, a congenital endowment sharpened by his recent tour of duty as lecturer, to the terrific task of changing the mores of a conservative citizenry. That his efforts succeeded is attested by the fact that by the early 1930's fire prevention had progressed to the point where the state was ready to undertake a reforestation program to restock some of the several million acres of burned over longleaf pine land from which the virgin timber had been cut during the two previous decades. The Forestry Commission established its first forest tree nursery in Brooks' Wiggins District at Perkinston, on the campus of the junior college. Then, with the advent of the Civilian Conservation Corps camps, his reforestation and fire control programs moved rapidly ahead.

It takes a good technician to be a top notch extension forester, but, even more than that, the job calls for the ability to speak in public clearly, forcefully, sincerely, and convincingly. Logically enough, Brooks was selected as extension forester of Mississippi in December 1934. Until that year, the extension forester, a position created in 1925, worked out of the Forestry Commission's office in Jackson. Brooks was the first extension forester to be located at the Mississippi State College, headquarters of the Agricultural Extension Service.

During his five years in this work there occurred a big expansion in tree planting on farms.

THE LATE BROOKS TOLER

He organized the first cooperative reforestation program between industry and the 4-H clubs, whereby industry supplied the seedlings and the farm boys planted them. Significantly, the Masonite Corporation, which Brooks was to join a decade later, was the first industrial firm to participate in this join program in Mississippi.

In addition Brooks, working with two well known Forest Service officers—W. R. Hine and the late Wilbur R. Mattoon—helped reorganize the active and dynamic Forestry Section of the Association of Southern Agricultural Workers, and served as section chairman (1939-1940). It was also during this period that he assisted in forming the first State Forestry Council.

In May 1939, the Alabama Commission of Forestry, which had been established in 1923, selected Brooks as state forester. As in all the southern states, fire was the big obstacle to forestry in Alabama. With characteristic energy, Brooks went to work on this obstinate problem, and greatly expanded and improved the state's fire control system. At the same time, he developed increasingly useful forest management and reforestation services, meanwhile adding to the commission's staff of professional foresters. Notably, it was during his incumbency that Alabama became the first southern state to adopt a tree farm program.

One of the trade organizations that has long promoted forestry in the South is the Southern Pine Association of New Orleans, organized in 1914, whose Conservation Committee has sponsored and guided a program of improved forest practices among its several hundred member companies in eleven states. In 1942, this association appointed Brooks Toler as its forester, and he immediately entered on an exceedingly busy round of activities caused by the impact of war demands on the industry for lumber. Conscientiously, he spent weeks at a time in constant travel, handling the forest management problems of the association, with frequent commuting trips between New Orleans and Washington. It was a strenuous existence, not in the least ameliorated by the necessity for long absences from home and by increasing demands on this strength.

After two years as forester for the Southern Pine Association, Brooks moved on to his last position as director of public relations and manager of the Land, Timber, and Wood Department of the Masonite Corporation at Laurel, Miss. The state was so happy to have its roving ambassador of forestry return home that Governor Fielding L. Wright appointed him a member of the Forestry and Park Commission, the second professional forester to serve in that capacity.

During his five years with Masonite, he increased the company's staff of professional foresters to ten. The firm's 205,000 acres of woodland is administered under a district setup with a forester in charge of each district's protection, management, and harvesting operations. A recent inspection of company lands has convinced the writer that Masonite is doing a most competent job of intensive forest management, one of which any landowner, governmental or industrial, could well be proud.

So much for his professional career; now a word about the man. Born August 16, 1906 in Crowley, La., Joseph Brooks Toler received his bachelor degree in forestry from Louisiana State University in 1928, and later did graduate work in soils and land management at Mississippi State College. He married Carolyn Barton Gordon of Jackson, Miss., in 1931; they have two children, Carolyn and Joe Brooks, Jr. Brooks *père* was a man of many interests: vestryman in the Episcopal Church; a member of Kappa Alpha, a social fraternity; a Rotarian; a member of both the Alabama and Mississippi Academies of Science, and vice president of the latter; a member of the Mississippi 4-H Club advisory Council; chairman of the Mississippi Forestry Council; a director of the Mississippi Forestry and Chemurgic Association, and of the Laurel Better Business Bureau; and a full Member of the Society of American Foresters.

The embodiment of southern hospitality, Brooks' greatest delight was in meeting foresters and talking forestry. Accordingly, at the Toler household the latch string was always out for visitors. Invariably, a welcome in this congenial home included serving that delicious deep South coffee which Mrs. Toler brews so skillfully and in the consumption of which Brooks displayed an astonishing and inordinate capacity.

Gregarious and friendly on all occasions, Brooks was really most happy when among a group of foresters on a field trip or at a convention. Then his remarkable and effortless memory for names and faces became evident. He literally knew everybody.

As it must to all men, death came suddenly to this able forester, this friend of thousands, this engaging southern gentleman, on September 3, 1949 at Crowley, La.

MONTY PAYNE.

Reviews

The Home Book of Trees and Shrubs. By J. J. Levison. 524 pp. Illus. Alfred A. Knopf, New York. 1949. $10.

For a long time there has been available to the home owner much literature dealing with the garden and largely restricted to herbaceous plant materials. In recent years this literature has been supplemented by several books with a broader point of view and an emphasis on woody plants and their uses. Among these *The Home Book of Trees and Shrubs* can be recommended. It bears out its title in that trees and shrubs are treated in a very comprehensive fashion; the text seems well adapted to the layman; there are many excellent illustrations; and the inclusion of some topics not ordinarily discussed gives the book considerable individuality.

Seventeen of the twenty-two chapters deal with trees and shrubs; the other five with design, lawns, herbaceous plants, accessories, and books. With the trees and shrubs there is discussion of their habits of growth and individual character; lists of plants for various uses; chapters on care, repair, diseases, and insects; and one chapter each on planting operations, the handling of woodland areas, and identification.

The lists are under such headings as Plants for the Foundation; Trees and Shrubs for Wet Places; Shrubs for the Rock Garden; Evergreen Trees for Town and City; and Worth-while, Interesting Deciduous Shrubs not Commonly Seen. With the lists, and elsewhere in the book, conditions around New York City are obviously represented; a reader might well have to make allowance for living in some other section of the country.

Some of the statements regarding plants are questionable or misleading. Is it true that "Most of us who have studied trees are left with the impression that they are all alike"? To say of *Mitchella repens* in one place "Likes acid soil," in another "soil, not acid" seems confusing, however tolerant the plant may be. This reviewer is in the position of a layman when it comes to plant diseases and he does not know what to make of the statement in one chapter that *Gloeosporium nervisequum* is the important fungus enemy of the London plane and in another chapter that it is *Gnomonia veneta.*

The chief criticism, however, is the use of plant names. Mr. Levison would have done well to explain to the reader the situation regarding them; as it is, he adds to the existing confusion. Regels privet is spelled three different ways. In one place we have *Chamaecyparis obtusa nana;* in another *Retinospora obtusa nana.* We also have *Chamaecyparis retinospora;* what is this? Why Kurume rhododendron, but Hinodegiri (one of the Kurumes) azalea? There is more of the same. Also, why does not Mr. Levison use the terms genus, species, and variety with their accepted horticultural meanings?

The chapter on design is of interest to anyone who knows what happens to this topic when presented to the layman. The author avoids both theory so general that its application is extremely difficult and the laying down of rules that make good results even less likely. He confines himself to discussing some points that seem to him of special importance—a definite plan, privacy, drives and walks, an aim for simplicity and naturalness, etc. Then he presents some planting plans, and a plan and description of his own place. This chapter is good.

The book centers around the suburban or country place of moderate size. The general principle that Mr. Levison seems to stress is that of basing planting upon thorough attention to the needs and characters of plants. This is sound enough; and if acquiring the fundamental knowledge is a considerable task for the layman, the author has done much to help him. To the reader with technical knowledge, such as the forester has, some of the text may seem elementary, repetitious, or didactic; but this can be overlooked in view of the large amount of generally sound advice.

There is, of course, no such thing as a ready guide to the problem of the home grounds. One really interested in doing the job himself should have recourse to many books, and among them the handsome volume of Mr. Levison's could well find a place.

A. F. Arnold,
New York State College of Forestry.

Wooden Dollars. By Henry I. Baldwin and Edgar L. Heermance. 127 pp. Illus. Federal Reserve Bank of Boston. 1949.

This report, based on a study of the functions of forestry in the New England economy, was made under a research grant by the Federal Reserve Bank of Boston to the Northeastern Wood Utilization Council. It contains the best statistical information available on the forest resources of the region and was prepared to assist landowners, businessmen, bankers, and the public to recognize the values provided by New England's forests, to see the possibilities that lie in this resource, and to join in the effort to turn these assets into new wealth for all.

The report is illustrated with pictures of woods and manufacturing operations, typifying the forest economy of the region, and the dollars and cents values are made clear to the layman by colored charts and graphs. While the public values and benefits are set forth, the burden of the report is in the economic interest to the private owner. New England's forests cover 77 percent of the total land area, a proportion larger than any other region in the United States. Only about five percent of the forest lands are in public ownership. Hence, the problem of restoring the forest lands to full production is a responsibility of the private owner. Although the rates of growth in New England are surprisingly favorable, it is estimated that the average acre is producing only about one-third of normal capacity under forest management.

Emphasis is placed on the tremendous wastes which have occurred since the settlement of the region, and the reforms which should be adopted in protection, silvicultural treatment, taxation, and modern utilization in order to reap the full social and economic benefits from this great resource. The forest as an investment is fully analyzed, so as to encourage the average owner to practice good management.

It is estimated that the total annual growth exceeds the total drain in New England's forests by nearly 18 percent, but this growth is largely in trees too small to be profitably utilized. Sawtimber is still being cut faster than it is being replaced.

A compilation of all the agencies engaged in forestry work is given, together with their particular functions. This list is surprisingly large, and with adequate support these agencies should be able to make rapid progress in the restoration of the forest resources.

The real significance of this report is the fact that a leading banking institution has joined forces with foresters and conservationists in their battle to capture in commercial form a larger percentage of the growing power of the forest soils of New England and to utilize the products more efficiently. This report will do more to arouse private owners to the potentialities in their forest investments, and will put more foresters into the woods, than could have been accomplished by a decade of lecturing on conservation.

HARRIS A. REYNOLDS.

Guide to Glacier National Park. By George C. Ruhle. 184 pp. Illus. Campbell-Mithun, Inc., Minneapolis. 1949.

To many thousands of Americans Glacier National Park represents the nation's supreme area of rugged mountain grandeur. It is altogether fitting that the literature on such an area should contain a complete and thoroughly accurate guide for the benefit of the casual visitor or the serious student. George Ruhle's new guide book does full justice to these requirements.

But this book does more than provide the usual information common to travel guides. Beginning with the forewords by National Park Service Director Newton B. Drury and Park Superintendent J. W. Emmert and with the author's preface, the book seems to portray the conservational spirit of the parks. The author's enthusiasm for the lore of Glacier is imparted to the reader to make it good reading as well as an encyclopedia of useful information.

The publication is prepared in compact, spiral-bound, handbook form for easy field use by the hiker, horseback rider, or motorist. The first eight chapters contain information on park administration, history, accommodations, transportation facilities, Indians, climate, mountain climbing, and trail riding. One chapter is devoted to a complete catalog of the park road system with brief descriptions of important features at various mileposts along the way.

Glacier is essentially a trail park, and Dr. Ruhle has dedicated the great bulk of his publication to telling the story of the trails. He describes the route, mileage, destination, and outstanding features of each major trail in the park. The trail descriptions are grouped under eight

central starting points, thus providing easy-to-use guides for hikers and riders in various centers of the park. Maps showing the trail systems fanning out from these centers are included with the text.

The last seven chapters are devoted to geology, life zones, trees and shrubs, flowers, mammals, birds, and park literature. The author pays special tribute to the park's spectacular geology. In simple language he tells how the mountains were sculptured, describes the formations, and unfolds the story of the glaciers and lakes. A summary of geological terms and line drawings showing the formation of mountains make this chapter a valuable reference.

To many who know the unique charm of Glacier's forests and who appreciate the contribution of the great forested slopes to the park's dynamic scenery, the chapter on trees and shrubs may appear somewhat abbreviated in comparison with other parts of the book. However, it contains more than is commonly found in a travel guide. A short description is provided of each principal tree and shrub together with a simple key to the pine family. Line drawings of leaves, cones, and seeds are included for six coniferous and three broadleaf species.

The book is superbly illustrated with 130 photographs. The captions on many of the photographs include line drawings to assist the traveler in identifying peaks and other topographic features. A handy-sized folding map of the park is bound at the rear of the book.

J. S. BARROWS.

Forest Spraying and Some Effects of DDT. Biological Bulletin No. 2, 174 pp. Illus. Department of Lands and Forests, Ontario, Canada, 1949.

This bulletin reports the results of a series of experiments conducted during 1944, 1945, and 1946 with the dispersal of DDT by aircraft as a control measure against the spruce budworm. It represents the combined work of a number of groups. The bulletin consists of a series of reports by various authorities associated with the studies. Seven of these reports deal with the effects of DDT on the fauna of the forest, including aquatic life, and three reports deal with spraying operations and the budworm control effected. A series of appendices give valuable information on properties of DDT, droplet size in relation to wind movement, and operational and cost data.

Initial tests were conducted in 1944 and on the basis of this work areas of 100 and 45 square miles were sprayed in 1945 and 1946 respectively. Studies of the effect of DDT on the forest fauna were conducted both as small scale laboratory experiments and in connection with the extensive spraying operations. Reported results are largely in agreement with previously reported findings of workers in the United States.

There was no appreciable effect on birds or mammals for dosages up to as much as four pounds per acre. It is suggested that frequent and repeated sprayings would be probably markedly reduce the bird populations. Practically all species of birds encountered fed on budworm larvae, pupae, and adults. A considerable difference was recorded in the susceptibility of various bird species to DDT poisoning. Although there was little evidence of direct injury to mammals, even at dosages of 6 pounds per acre, it was believed that insectivores might be affected, at least temporarily, by a reduction in their food supply.

Experimental study suggested that amphibians and reptiles might be affected to the extent of a fifty percent population reduction. Under actual operation conditions, however, there was little evidence of any significant effect on at least the total amphibian population.

For fish (particularly trout,) it was shown that although they are susceptible to DDT even in very small dosages, there was no evidence of any appreciable effect on the total fish population under operating conditions. A warning is given that in extensive spraying operations care should be taken to avoid unnecessary contamination of streams and lake margins.

Aquatic invertebrates were found to be extremely susceptible to DDT. A reduction of the aquatic invertebrate population would result in a reduced growth rate of fish or cause their migration. Populations of invertebrates would rebuild to normal within one to two years. The resistance of eggs and pupae suggests that under conditions of incidental spraying of streams there is little likelihood that the invertebrate population would be reduced below sixty percent of normal.

Spray operations were conducted with Canso twin-engine amphibians, using one 625-gallon wing tank for spray storage. A variety of spray formulae and dosages was tested. Emphasis is

placed on the need for development of close cooperation between ground and air crews, effective meteorological services and communications and adequate marking of areas to be sprayed. In 1946 costs amounted to $3.25 per acre, including a chargeable portion of the cost of a purchased plane.

The 1945 programme, applying DDT at the rate of one pound per acre gave fifty to sixty percent control of the budworm. It was believed that this reduction materially retarded damage. In 1946, applying two pounds of DDT over most of a 45-square mile area, a budworm kill of over ninety percent was secured.

The information contained in this bulletin should be useful in dealing with future budworm outbreaks. It is evident, however, that more study is necessary on the effects of DDT on the fauna of the forest. A conspicuous omission is the lack of any studies on the effect of DDT on the general insect complex, particularly on beneficial parasites and predators.

Moreover, further work is needed to develop more efficient spraying operations which would reduce costs. The statement that the experiments show that the budworm can be economically attacked from the air may be open to question.

The bulletin would have made easier reading if related material had been combined rather than being scattered through separate sections. At least a summary should have been included. Readers of this bulletin will be interested in an article by Hoffman and Linduska on "Some Considerations of the Biological Effects of DDT" published in the August, 1949 issue of *Scientific Monthly*. Here again is stressed the need for further study before DDT can be generally used over wide areas.

A. S. WEST, JR.,
Queen's University,
Kingston, Ontario.

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Our South: Its Resources and Their Use. By Everett F. Evans and Roy L. Donahue. 406 pp. Illus. The Steck Co., Austin, Texas. 1949. $3.50.

This is primarily a textbook for secondary schools. But if you avoid reading it on that account, you will be doing yourself a disservice. It is a good survey of the South's resources and what their use has meant and can mean to its people. It is a book for your family educational bookshelf.

The scope of this book comprises the thirteen southern states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. The resource situation is discussed under the headings of Climate, Minerals, Soils, Water, Forests, Grass, and Wildlife. Each section provides general subject treatment on a regional basis as well as detailed data and discussion for each of the several states. This ensures both extended knowledge and specific information.

This text contains a tremendous amount of information, data, maps, charts, and tables. There is no dearth of classroom material. Over one hundred exceptionally good photographs provide both appeal and information. Throughout, there has been an effective effort made to keep the complex inter-dependency of all the resources in the fore. This is really the fibre of resource use.

Actually, this is more than a textbook. It will well serve as a resource handbook of the South. The material is well classified and easily located. Many persons could benefit from having a copy on hand. Specialists will undoubtedly find much to dispute in the presentation of their individual subjects. They will also probably find considerable to praise. Books of this type always difficult to write. It is frequently necessary to decide how far factual data can be elasticized in the interests of educational objectives. Moreover, the absolute breadth of the problem coupled with questionable data sources furnish realistic barriers.

One serious criticism is justified. Despite the impressive list of qualified manuscript reviewers given in preface, it is readily evident that inadequate review and proofing have noticeably detracted from the quality of the book. The reversal of a before and after picture with its caption, faulty tree range descriptions, and inaccurate statements should not be permitted in a contribution to resource use education. It is both often and unfortunate that the technical contents of lay books must suffer this type of distortion.

But this is still a good book. There is a need for it. If adopted for use, it will do a lot toward acquainting students with the nature and importance of our resources.

PAUL R. KRAMER.

Ten Years of Pittman-Robertson Wildlife Restoration. By Robert M. Rutherford. 128 pp. Illus. Wildlife Management Institute, Washington, D. C. 1949.

In the field of wildlife management the Pittman-Robertson Act stands as a landmark, much as do the Weeks Law and the Clarke-McNary Act in professional forestry. Federal excise taxes on arms and ammunition, levied under the terms of this law, have made possible a national, and a cooperative, program of wildlife restoration. Now after ten years of the law's operation we have an accounting of Pittman-Robertson accomplishments. The report of this stewardship should be heartening to every American conservationist.

Plans which resulted in the Pittman-Robertson Act were conceived in the dark days of the dust bowl and an international waterfowl crisis. While hunting pressures steadily increased, drought of almost continental proportions resulted in massive soil erosion and in wholesale wildlife habitat destruction. The Pittman-Robertson Act became a part of the broad conservation program designed to mend some of the damage done, and to reverse the all-too-evident downward trend of our renewable resources.

Following the wise pattern of other conservation measures, the Pittman-Robertson law depends for its administration on federal-state cooperation. To those states which have passed enabling legislation the Fish and Wildlife Service returns funds on a 75-25 matching basis, according to a formula derived from the numbers of hunting licenses sold within the several states. State conservation agencies prepare specific plans for wildlife betterment, and upon approval of these they become projects in being.

During the ten year period 1939-1948 which this report covers, more than 21 million dollars has been apportioned to the states and territories. This, together with some seven million dollars of state matching funds, amounts to a total of $28,692,038. Projects have been established looking to the betterment of virtually every important game species in the nation. Some 873,768 acres of wildlife land have been purchased or approved for purchase. Game birds and mammals trapped and transplanted to new or more favorable habitats number 224 123.

To date all the states and territories have passed enabling legislation allowing them to participate in Pittman-Robertson allocations. Five general types of projects are in operation—coordination, developmental, land acquisition, maintenance, and surveys and investigations. Approval has been given to 1,061 projects.

Many of these projects operate on forest land in private, state, or federal ownership. Thus they are often of intimate concern to foresters. An excellent example of this is to be found in the cooperative agreements for wildlife improvement programs between national forest administrations and state conservation departments in Virginia and West Virginia. Under these agreements the national forests furnish the land and the states direct the program. Forest openings are created, game food patches planted, and, in general, wildlife habitats are improved and protected. So well have these cooperative projects worked that similar agreements are being made in other states.

A major byproduct of the Pittman-Robertson Act has been the expansion and stabilization of employment in the field of wildlife management. Projects must have trained supervisors, and the forestry schools, through their wildlife curricula, are furnishing many of these.

Most foresters will have had some local contacts with Pittman-Robertson projects. Through the medium of this report, however, they may see the national scope of the program. Its performance, and its future promise, are vital to American conservation.

MAURICE BROOKS,
West Virginia University.

Estes Park: Resort in the Rockies. By Edwin J. Foscue and Louis O. Quam. 98 pp. Illus. University Press in Dallas, Texas. 1949. $2.

This book fills a great need. Both authors are authorities in their respective fields and both are intimately familiar with the region under discussion, having spent many seasons in the vicinity. Although a geographical study, with emphasis on the natural setting (including an admirable summary of the geomorphology of the region), the great value of the book lies in its accurate, objective, and up to date treatment of the human occupance of the Estes Park area.

Much valuable information on the early history and development of Estes Park as a resort has been assembled and presented in two chapters. We do not know of any better, condensed, summary of this material. It is by no means a book restricted to early history, however, as

chapters which conclude the book give an excellent resume of recent development, including a brief outline of the Colorado-Big Thompson reclamation project, the most important human activity in the region today.

It is but inevitable that so complete a resume should contain a few errors. These are all very minor and do not affect the value of the book in any way. Chapter 2, "Origin of the Landscape" gets into the controversial matter of the peneplains of the Rocky Mountains. The authors accept the two peneplain theory which brings upon their heads the ire of protagonists of both the one-cycle and multiple-peneplain hypotheses.

Reading of this book has become a "must" for the seasonal employees dealing with the interpretation of the region. The authors should be commended for their preparation of so important a piece of regional literature.

DAVID H. CANFIELD,
Rocky Mountain National Park.

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Our Imperiled Resources. Report of the Seventeenth Annual New York Herald Tribune Forum. 247 pp. Illus. New York Herald Tribune, Inc., New York. 1948. $2.25.

Except for two years, during which the shadow of war covered the earth, the New York *Hearld Tribune* has arranged forums on the most vital current questions. Three days during each October since 1933 have been devoted to this worthy undertaking. The topics have followed the times, from the Crisis in 1933 to the Responsibility of Victory in 1946. Subjects discussed and debated have been suggested by depression, dictators, the second world war and victory.

In 1948 the subject was conservation—*Our Imperiled Resources.* This subject was timely, particularly in view of the interest and controversy aroused by Fairfield Osborne's *Our Plundered Planet* and William Vogt's *The Road To Survival.*

The book which now emerges from the 1948 Forum records the words of every speaker who took part in the three-day program, and includes the introductions, and even the incidental contributions such as the opening program of music presented by the St. Thomas choir. The volume carries a soil erosion map of the United States (frontispiece), an appropriate cartoon by Ding, and a candid photograph of every forum speaker and program participant. A list of books by prominent speakers is provided, a suggested reading course on the 1948 theme compiled by Brentano's Inc., and a list of Forum speakers complete from 1930 to 1948.

To those who listened to the Forum discussion by radio, or who read thoughtfully the 76-page supplement in the Sunday *Herald Tribune,* which carried, verbatim, the words of the speakers, this book is a valuable review and a permanent library record. In it we meet the speakers in person, even on more intimate ground, it seems to me, than when we saw them standing at the microphone at the Waldorf, or observed them engaged in spirited discussion and debate at their places on the platform. Here we have their contributions before us for study and appraisal.

Those whose interest was not captivated by the event and its world-wide importance at the time, and those who prefer the printed word for reflection and individual action, have here an opportunity, and I would go so far as to say a

duty as citizens to perform. It is late, but not yet too late, for the individual American citizen to take part in the conservation forum to which this book points the way. The fundamental reason for the present state of our resources is that man has never adequately related himself to his total environment.

The keynote address of senior statesman Bernard Baruch contains this thought, "Whether the years to come will be lighted by courage or darkened by fear depends on the great American forum."

JAMES R. SIMMONS.

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Forest Management Education in Oregon. By Walter Fraser McCulloch. 135 pp. Oregon State College, Corvallis, 1949. $1.

This timely monograph is a scholarly, accurate, well documented, and tremendously significant treatise on a subject of utmost importance to both forestry educators and all employers of young foresters. Prof. McCulloch draws not only upon his own wide experience and extensive researches, but also upon the findings and views of an imposing array of other educators, of employers, and of personnel specialists in presenting a thorough, thought provoking analysis of professional forestry training.

Following a succinct foreword by former Dean Davis of Montana State University, the monograph is divided into four parts. The first part introduces the subject and traces the concurrent development of forestry and evolution of forestry education generally in America and particularly in Oregon.

Part II discusses the personnel phases of education in forest management, and outlines a constructive plan embodying the triple approach of orientation, personal guidance, and professional guidance. To your reviewer this is the outstanding contribution of this significant book. As enrollment of forestry schools and the extent of forestry services have risen gradually since their inception, with greater acceleration for the past fifteen years and at a spectacular rate immediately following the recent war, forestry educators have found themselves increasingly farther away from the individual student. At the same time they have had greater difficulty in keeping up with the many new developments and the expanding requirements of employers. All of this has meant less effective counselling of students and young graduates. McCulloch proposes a practical plan for making personnel work an integral and effective part of the forestry school program. His plan is working at Oregon State College and should be readily adaptable to other forestry schools.

Part III takes up the forestry school curriculum. The problems and the objectives of professional forestry education are carefully analyzed and ably expressed. Particularly important are the author's presentations of general education requirements for foresters and the need for extensive revision of technical forestry courses, particularly in emphasis, to provide effectively for industrial forest management as well as public forest management. In this connection there can be no valid disagreement with McCulloch on the objectives he sets up. They are logical and are based on well substantiated needs. Some of us may have a few doubts as to whether the exact curriculum he proposes will accomplish these objectives fully. There would appear to be a large proportion of "survey" courses which help to develop the broad outlook we desire to foster, but which may not furnish the mental disciplines to develop the equally important habits of accuracy, thoroughness, and logic. With the limitations of time, civil service requirements, and local needs imposed upon the modern forestry curriculum, it become a compromise which, as McCulloch points out, we are constantly striving to improve. The author states the facts and problems fairly and offers a constructive and fundamentally sound plan. It is a challenge to others to try to improve on it.

Part IV consists of a splendid summary, a bibliography of books and articles, and an appendix containing samples of some of the personnel forms used by Oregon State College.

The author has been modest in his title. He might well have called his monograph *Forestry Education in North America.* The principles he enunciates will apply equally well over the whole continent with minor modifications to meet local conditions. Likewise they are sound for other lines of forestry outside the broad field of forest management. Every forestry educator, every employer of young forestry students and graduates, every forestry student or recent graduate (for whose ultimate benefit this book was written)—indeed every forester—will find *Forest Management Education in Oregon* tremendously interesting and helpful.

LOWELL BESLEY,
University of British Columbia.

Current Literature

Compiled by MARTHA MEELIG, *Librarian*
The New York State College of Forestry

Range Management Section Compiled by
FRANCES FLICK, *Library, U. S. Department of Agriculture*

General

The Children's Book of Trees. By Leonard Knott. 32 pp. Editorial Associates, Ltd. and Canadian Forestry Association, Montreal. 1949. $1.

The Fire Patrol. By Dickson Reynolds. 192 pp. Thomas Nelson & Sons, New York. 1949. $2. (Juvenile)

The Soil and the Sea; a Symposium. Ed. by Trevor Williams. 242 pp. Illus. Saturn press, London. 1949. 10s. 6d.

Woodland Crafts in Britain. By H. L. Edlin. 177 pp. Illus. B. T. Batsford, Ltd. London. 1949. 15s.

Farm Forestry

Farm Woods Management in Southern Minnesota. By J. R. Neetzel. 28 pp. Lake States Forest Expt. Sta., St. Paul 1, Minn. 1949. Mimeog.

Forest Influences

Forestry and Water Supplies in South Africa. By C. L. Wicht. 58 pp. Illus. Union of South Africa Dept. of Forestry. 1949. Bul. No. 33. 6d. (Govt. printer)

A Progress Report on an Investigation of the Influence of Reforestation on Stream-Flow in State Forests in Central New York. By G. R. Ayer. U. S. Geol. Sur. in cooperation with New York State Cons. Dept., Albany. 1949. Mimeog.

Forest Management

Elementary Forest Mensuration. By A. D. McKinnon. 112 pp. New Zealand State Forest Serv., Wellington. 1947. 6d.

Stereograms Illustrating Forest Sites. By K. E. Moessner. 20 pp. Illus. Central States Forest Expt. Sta., Columbus 13, Ohio. 1949. Misc. Release No. 4.

Forest Products

Christmas Tree Farming. rev. By J. A. Cope. 32 pp. Illus. New York State College of Agriculture, Ithaca. 1949. Cornell Ext. Bul. No. 704.

Preliminary Survey of Markets and Prices of Forest Products in the Del-Mar-Va Peninsula. By G. E. Doverspike. 27 pp. Northeastern Forest Expt. Sta., Upper Darby, Pa. 1949. Sta. Paper No. 27.

Suggested Montana Douglas-fir Christmas Tree Standards. By S. Blair Hutchinson and Ben M. Riley. 14 pp. Northern Rocky Mountain Forest and Range Expt. Sta., Missoula, Mont. 1949. Station Paper No. 18.

Forest Resources

Forest Resources of Northeast Florida, 1949. By J. F. McCormack. 36 pp. Southeastern Forest Expt. Sta., Asheville, N. C. 1949. Forest Survey Release No. 30.

Forest Resources of Northeast Washington. By P. D. Kemp and H. J. Pissot. 29 pp. Northern Rocky Mt. Forest and Range Expt. Sta., Missoula. 1949. Sta. Paper No. 21.

Forest Resources of Southern Montana. By W. C. Hodge, C. W. Brown and T. L. Finch. 20 pp. Northern Rocky Mt. Forest and Range Expt. Sta., Missoula. 1949. Sta. Paper No. 20.

The Supply of Wood as Raw Material for the Finnish Forest Industries. Totals for the Whole Country. By Eino Saari. pp. 202-251, 1-10. Forest Work Studies Section of the Central Association of Finnish Woodworking Industries, Helsinki. 1948. Publ. No. 16. Summary in English.

Pathology

Control of Wood Decay by Certain Brushed-on Preservatives. By R. R. Hirt. 16 pp. Illus. New York State College of Forestry, Syracuse. 1949. Free.

Range Management

Activating Genetic Concept into Range Sheep Improvement. By J. E. Nordby. Northwest Science, Pullman, Wash. Vol. 22, pp. 60-68. May 1948.

An Analysis of Forage Utilization Methods and a Proposal for Utilization Surveys by Range

Condition Classes. By R. R. Humphrey. JOUR. OF FORESTRY, Washington 6, D. C. Vol. 47, pp. 549-554. July 1949.

The Chemistry of Grassland. By R. G. Baskett. Conference on Grassland and Animal Health, Natl. Veterinary Medical Assoc. of Gt. Brit. and Ireland, London. Pub. No. 17, pp. 20-30. 1948.

The Effect of Time and Degree of Clipping on the Volume of Forage Produced by Blue Grama. (Abs.) By G. E. Klipple. Jour. of the Colo.-Wyo. Acad. of Science, Boulder. Vol. 3, No. 6, p. 46. September 1948.

The Forest Range in Southern Agriculture. 6 papers. Assoc. of Southern Agric. Workers, Baton Rouge, La. 1949. Mimeog.

Mulch on the Range Means More Grass for Producing Beef. By E. J. Dyksterhuis. Ranchman, Tulsa, Okla. Vol. 8, No. 13, p. 46. May 1949.

Photosensitivity Diseases in New Zealand. 5., Hypericum perforatum. By I. J. Cunningham. New Zealand Dept. of Agric., Wellington. Animal Research Div. Pub. No. 43, pp. 207-213. 1948.

Range Condition; a Classification of the Grassland-Sagebrush and Aspen Forage Types in the North Bingham Soil Conservation District. By I. Clark. 26 pp. Illus. U. S. Soil Conserv. Serv., Shelley, Idaho, 1948.

The Remuda in Range Management. By H. M. Bell. Tex. Livestock Jour., San Antonio. Vol. 8, No. 5, pp. 82-83. May 15, 1949.

The Taylor Grazing Act and the West. (Abs.) By T. K. Kelley. Assoc. Amer. Geographers, Syracuse 10, N. Y. Annals, Vol. 39, pp. 56-57. March 1949.

Reseeding Research. By W. R. Chapline. Amer. Cattle Producer, Denver 2, Colo. Vol. 31, No. 1, pp. 9-11, 24-27. Illus. June 1949.

The Shadscale Vegetation Zone of Nevada and Eastern California in Relation to Climate and Soils. By W. D. Billings. Amer. Midland Naturalist, Notre Dame, Ind. Vol. 42, pp. 87-109. Illus. July 1949.

The Vegetation and Pastures of Western New South Wales. By N. C. W. Beadle. 281 pp. New South Wales Dept. of Conservation, Sydney, Austraila, 1948.

Silvics and Silviculture

Les Peupliers Francais. By Mennier, Guinier and Regnier. 35 pp. Illus. Revue du Bois, Paris. 1947.

The Use of Ammate for Killing Undesirable Hardwoods on Pine Sites. Texas Forest Serv., College Station. 1949. Cir. No. 21. Free.

Soil Conservation

The Value of Crop Rotations for Soil and Water Conservation. By R. E. Uhland. 12 pp. U. S. Soil Cons. Serv., Washington 25, D. C. 1949.

Wood Preservation

Experiments on the Preservation of Mine Timber. By J. Bryan and N. A. Richardson. 9 pp. Illus. Great Britain. Dept. of Sci. and Indus. Research, London. 1949. Forest Products Research Records No. 3. 6d. (H. M. Sta. Off.)

Wood Technology and Utilization

Aspen for Excelsior. By Hereford Garland. 10 pp. Lake States Forest Expt. Sta., St. Paul, Minn. 1949. Aspen Rept. No. 16.

Basic Properties of Yellow Birch Laminates Modified with Phenol and Urea Resin. By E. C. O. Erickson and W. F. Faulkes. 14 pp. U. S. Forest Products Products Laboratory, Madison, Wis. 1949. R1741. Mimeog.

The Calibration of Two Types of Moisture Meters for Several Tropical Woods. By W. W. Rice and F. E. Dickinson. 5 pp. Tables. Yale School of Forestry, New Haven, Conn. 1949. Tech. Rept. No. 2. Mimeog.

Commercial Lignins. By R. S. Aries and Arthur Pollak. 23 pp. Northeastern Wood Utilization Council, New Haven 6, Conn. 1949. $1.00.

The Cost of Producing Wood Chips for Coarse Fiber in the Central States Region. By J. T. Morgan. Central States Forest Expt. Sta., Columbus 15, Ohio. 1949.

A Manual of the Timbers of the World. 3d. ed. By A. L. Howard. 751 pp. Illus. MacMillan Co., Ltd., London. 1948. 52s. 6d.

Moisture Absorption in Certain Tropical American Woods. By T. E. Batey, Jr. and F. F. Wangaard. 7 pp. Tables. Yale School of Forestry, New Haven, Conn. 1949. Tech. Rept. No. 1. Mimeog.

South Queensland Building Timbers and Specifications for Their Use. By C. J. J. Watson. 28 pp. Queensland Forest Serv., Brisbane. 1947. Pamphlet No. 2.

Western Red Cedar Lumber; Its Properties and Uses. Folder. Illus. West Coast Lumbermen's Association, Portland 5, Ore. 1949. Free.

Society Affairs

Officers and Members of the Council—1948-1949

CLYDE S. MARTIN, *President*
Weyerhaeuser Timber Company,
P. O. Box 1645,
Tacoma 1, Wash.

CHARLES F. EVANS, *Vice-President*
U. S. Forest Service,
Glenn Building,
Atlanta 3, Ga.

HENRY CLEPPER, *Executive Secretary*
825 Mills Building,
17th Street at Pennsylvania Avenue, N. W.
Washington 6, D. C.

WILLIS M. BAKER,
Forestry Relations Division,
Tennessee Valley Authority,
Norris, Tenn.

CHARLES H. FLORY,
State Commission of Forestry,
Calhoun State Office Building,
Columbia, S. C.

RICHARD E. MCARDLE,
Forest Service,
U. S. Department of Agriculture,
Washington 25, D. C.

PAUL M. DUNN,
School of Forestry,
Oregon State College,
Corvallis, Oreg.

WILLIAM B. GREELEY,
West Coast Lumbermen's Association,
4444 White-Henry-Stuart Building,
Seattle 1 ,Wash.

DEWITT NELSON,
Division of Forestry,
Department of Natural Resources,
Sacramento 14, Calif.

JAMES C. EVENDEN,
Bureau of Entomology and Plant Quarantine,
U. S. Department of Agriculture,
Coeur d'Alene, Idaho.

CLARENCE S. HERR,
Woods Department,
Brown Company,
Berlin, N. H.

JOHN W. SPENCER,
U. S. Forest Service,
Post Office Building,
Denver 2, Colo.

Announcement of Nominations for President and Council

The following nominations for the office of president and for membership on the Council have been received. Calls for nominations were published monthly during the year in this section of the JOURNAL. Nominations closed October 15.

The regular biennial election will be held December 10. A president, vice president, and nine other members of the Council will be elected for two year terms 1950-1951.

Each voter will have an opportunity to ballot on all nominees. Candidates for the office of president are voted on separately; the candidate who receives the highest vote is declared elected president, and the candidate who receives the next highest vote is declared elected vice president. The nine remaining Council members are elected in accordance with the system of proportional representation.

For President

Charles F. Evans, U. S. Forest Service, Atlanta, Ga. (Southeastern Section.)

Clarence S. Herr, Woods Department, Brown Company, Berlin, N. H. (New England Section.)

For the Council

Arnold, LeRoy D. Director of forestry, Bureau of Indian Affairs, U. S. Department of the Interior. (Washington Section.)

Blackwell, Lloyd P. Head of Department of Forestry, Louisiana Polytechnic Institute, Ruston, La. (Gulf States Section.)

Brundage, Fred H. Harbor Plywood Company, Portland, Ore. (Columbia River Section.)

Claridge, Fred H. Assistant forester (management), Division of Forestry, N. C. Department of Conservation and Development, Raleigh, N. C. (Appalachian Section.)

Demeritt, Dwight B. Manager of woodlands, Dead River Company, Bangor, Maine. (New England Section.)

Floyd, J. Whitney. Head Department of Forest Management, School of Forestry, Range, and Wildlife Management, Utah State College, Logan, Utah. (Intermountain Section.)

Fontanna, Stanley G. Deputy director, Michigan Department of Conservation, Lansing, Michigan. (Central States Section.)

Hayes, Ralph W. Director, School of Forestry, Louisiana State University, Baton Rouge, La. (Gulf States Section.)

Kaufert, Frank H. Chief, Division of Forestry, University of Minnesota, St. Paul, Minn. (Upper Mississippi Valley Section.)

Lindh, C. Otto. Assistant regional forester, U. S. Forest Service, Albuquerque, N. Mex. (Southwestern Section.)

Littlefield, Edward W. Superintendent of forest management, Division of Lands and Forests, New York Conservation Department, Albany, N. Y. (New York Section.)

Marckworth, Gordon D. Dean, College of Forestry, University of Washington, Seattle, Wash. (Puget Sound Section.)

McArdle, Richard E. Assistant chief, U. S. Forest Service, Washington, D. C. (Washington Section.)

Moir, Stuart. Forest counsel, Western Forestry and Conservation Association, Portland, Ore. (Columbia River Section.)

Moore, Elwood B. Chief, Bureau of Forest Management, New Jersey Department of Conservation and Economic Development, Trenton, N. J. (Allegheny Section.)

Nelson, DeWitt. State forester, California Department of Natural Resources, Sacramento, Calif. (Northern California Section.)

Porter, Earl. Woodlands Department, International Paper Company, Mobile, Ala. (Southeastern Section.)

Reynolds, R. R., U. S. Forest Service, Crossett, Ark. (Ozark Section.)

Watson, Russell. Consulting forester, Manistique, Mich. (Wisconsin-Upper Michigan Section.)

White, George O. State Forester, Missouri Conservation Commission, Jefferson City, Mo. (Ozark Section.)

Wolff, Meyer H., U. S. Forest Service, Missoula, Mont. (Northern Rocky Mountain Section.)

Announcement of Nominations to the Grade of Fellow

The following nominations for the grade of Fellow have been received. Calls for nominations to this grade were published monthly during the year in this section of the JOURNAL. Nominations closed October 15.

Fellows are not elected by the membership at large, but by a board of electors which consists of all present Fellows and the present Council. (A Council member who is also a Fellow has but one vote.)

The Society has 48 living Fellows. These, together with the 9 members of the Council who are not Fellows, comprise for this election an electorate of 57. An affirmative vote of not less than one-half the total number of votes cast is necessary to elect a candidate.

Frederick S. Baker, California.
Frederick H. Brundage, Oregon.
Henry E. Clepper, District of Columbia.
Elwood L. Demmon, Minnesota.
Charles F. Evans, Georgia.
John A. Ferguson, Pennsylvania.
John H. Foster, New Hampshire.
Cedric H. Guise, New York.
J. Alfred Hall, Oregon.
William M. Harlow, New York.
Verne L. Harper, Pennsylvania.
Carl P. Hartley, Maryland.
Paul A. Herbert, Michigan.
Arthur S. Hopkins, New York.
Evan W. Kelley, Montana.
Royal S. Kellogg, New York.
Edward I. Kotok, District of Columbia.
Perry H. Merrill, Vermont.
Woodbridge Metcalf, California.
Lee Muck, District of Columbia.
Edward N. Munns, District of Columbia.
Dana Parkinson, District of Columbia.
Jay H. Price, Wisconsin.
A. B. Recknagel, New York.
William B. Rice, Utah.
T. Edward Shaw, Indiana.
Ellwood Wilson, Canada.
Stephen N. Wyckoff, California.
Edwin A. Ziegler, Florida.

An Open Letter to President Martin About Membership Qualifications

September 7, 1949

Dear President Martin:

I have been following the developments regarding changes in Society membership requirements with a great deal of interest and considerable alarm.

According to the constitution, the objects of the Society are "to represent, advance and protect the interests and standards of the profession of forestry, to provide a medium for the

exchange of professional thought, and to promote the science, practice and standards of forestry in America." It is generally believed to be the professional organization of professional foresters. In the light of this, I am particularly disturbed over two recent proposals as outlined on pages 151-152 of the February 1949 issue of the JOURNAL. I will discuss these separately.

The proposal was made by the Committee on Accrediting to set up a "core" of subject matter courses which a student must have had before being eligible for membership. At the same time, the proposal left it up to the personal opinion of the individual school or department head as to which of his various curricula qualify his graduates for Junior Membership. The chaos which is the result of such a proposal was made evident by the tabulated replies to Mr. Clepper's questionnaire to forestry school and department heads. The replies lacked consistency and meant that, because of various individual interpretations, and personal beliefs, the graduates of wood utilization curricula in certain schools were considered eligible while those with similar background of other schools were not.

In my opinion, the decisions as to whether graduates of certain curricula are eligible for membership should be made in the Society by the Committee on Membership Requirements after examination of the content of questionable curricula. In this process, the curricula in general wood utilization offered in a number of institutions should be considered forestry, and graduates from these programs of study should be admitted to Junior Membership. In this connection, I would not consider the more highly specialized curricula such as lumber merchandizing, furniture manufacture, or pulp and paper chemistry as qualifying curricula.

I have no objection to the employment of a minimum list or "core" of courses as a criterion, provided that the nature of this list does not exclude this large segment of our forestry graduates in general wood utilization from Society membership. The old concept that forestry ends at the undercut does not hold any longer. Many Society members, originally trained in general forestry, who are now in utilization work, in teaching, research, or private business feel that the Society does not want them. Many of the students in school or recently graduated in general wood utilization curricula are of the same opinion. Yet the Society has a Subject Division of Forest Products and the titles of some of the papers in this Division for presentation at the annual meeting at Seattle do not sound like forest management to me. This situation is in a mess and should be clarified at the earliest possible opportunity if we are not to lose these men through failure to join and through resignations.

I am not familiar with the contents of the original report of the Committee on Membership Requirements, but the proposal by a small minority of the Society Membership of the Intermountain Section to "liberalize" or open up Junior Membership to men without training in forestry is not consistent with the "tightening-up" of requirements proposed by the Committee on Accrediting. It is also not consistent with the title, nature, and objectives of the Society as stated in the constitution. To the layman, a member of the Society of American Foresters is a forester. The admission of men who are not foresters to Society membership cannot benefit the profession in any way and will lead only to confusion in the mind of the layman as to what a forester is—after we have tried for fifty years to clarify our status and to build up a recognized profession in this country.

The point has been raised that these men should be admitted to the Society because of their "interest in forestry" or because they are employed by agencies working with "wild land." We all recognize that as foresters, we are not able to solve all of the problems to be encountered and must make use of the knowledge and experience of men in other professions. These men work with us in the field and we welcome them to attend our meetings and take part in discussions. But this should not qualify them for membership in our professional society. They all have their own professional societies and should join and support them. The basis for decisions as to qualifications for membership should be the nature of professional training, not the nature of the organization in which the man happens to be employed.

I have discussed these membership questions with a large number of Society members throughout the northeast and most of them have expressed dissatisfaction with membership requirements and grades as they now stand and particularly with the direction in which we appear to be headed. If any change in membership grades is needed, it surely is in the direction of making a stronger professional society—not that of a loosely knit organization of persons "in-

terested" in forestry or "wild land" with widely divergent backgrounds and points of view. There already is an American Forestry Association which very satisfactorily fulfills the need for an organization open to all persons with activities and interests in all phases of the conservation of natural resources. There is no need for another one.

We are at a turning point in the life of the Society and I propose that we take the turn toward a strong unified society composed of professional foresters. In order to aid in this accomplishment, I suggest that the present seven grades of membership be reduced to three as follows:

Fellow—a grade of recognition of outstanding achievements in the profession of forestry and open only to professional foresters.

Honorary—a grade of recognition of outstanding achievements which have benefited the profession of forestry by individuals who are not professional foresters.

Member—the general grade which would include all graduates of accredited schools in general forestry or general wood utilization curricula. Student membership would be extended to all seniors in these curricula and would automatically become full membership upon evidence of graduation.

I believe that this simplification would do away with the endless discussions and dissatisfaction concerning membership requirements and would clarify once and for all just what we are as a professional society. It would not please everybody for that is impossible, but I believe it would fit with majority opinion as to what the foresters of the country want their society to be.

Sincerly yours,
J. HUGO KRAEMER,
Member.

Newton B. Drury Elected Honorary Member S.A.F.

August 15, 1949

Newton B. Drury, Director,
National Park Service,
Department of the Interior,
Washington 25, D. C.

DEAR MR. DRURY:

I have the honor to inform you that the Council of the Society of American Foresters effective August 15, 1949, has elected you an Honorary Member of the Society.

According to our Constitution, "Honorary Members shall be (1) persons not foresters who have rendered distinguished service to forestry either in America or abroad, or (2) professional foresters of outstanding achievement whose field of work lies outside of, and who are not citizens of, the United States, its possessions, or Canada."

Honorary Members do not pay dues.

Enclosed is a preliminary announcement of the annual meeting of the Society to be held in Seattle, October 11-14. Please accept this as a warm welcome to attend this meeting.

Sincerely yours,

CLYDE S. MARTIN,
President.

August 29, 1949

Mr. Clyde S. Martin, President,
Society of American Foresters,
Washington, D. C.

MY DEAR MR. MARTIN:

Your letter of August 15 was forwarded to me here, and I accept with appreciation the honor conferred upon me by the Council of the Society of American Foresters. I am much interested in the announcement of the annual meeting to be held in Seattle in October and hope that I can plan to be there for at least some of the sessions. In any event, I shall look forward to seeing you in Washington some time after my return toward the middle of September.

With best regards.

Sincerely yours,

NEWTON B. DRURY,
Director.

Results of Referendum

As of September 23, 1949, a substantial majority of the members casting ballots voted to hold the referendum requested by a petition submitted to the Council on October 12, 1948.

The referendum itself was as follows:

Section 1 of Senate bill 580 of the 80th Congress (and its successor S. 148 of the 81st Congress) would transfer to the Department of the Interior the administrative jurisdiction of some 462,000 acres of controverted land, now administered by the Department of Agriculture under agreement between the two depart-

ments. In consideration of the petition submitted to the Council on October 12, 1948, and of the supporting and opposing statements in connection therewith, do you approve or disapprove this transfer?

By a substantial majority, the voting members who returned ballots went on record as disapproving this transfer.

The vote on whether or not to hold the referendum was 1,683 for it, and 934 against it.

The vote on the referendum itself was 558 approving transfer of the 462,000 acres of controverted land, to 2,005 disapproving the transfer.

Only 41 percent of the voting membership cast ballots on this referendum.

Ozark Section Holds Successful Field Meeting

A field meeting of the Ozark Section was held in southern Missouri on September 9 and 10 with about eighty members and guests in attendance.

Leaving Van Buren, Mo. on the morning of the first day, the party inspected stand improvement operations on the Clark National Forest; then visited the headquarters of the Eminence Forest Protection District maintained by the Missouri Conservation Commission, where the Wagler fire plow unit was displayed, and results of fifteen years of fire protection in hardwoods were seen.

A feature of the meeting was the inauguration of the Missouri tree farm system with the dedication of the 86,000-acre Pioneer Tree Farm, owned and operated by National Distillers Products Corporation. George O. White, state forester, acted as master of ceremonies for the occasion. Among the speakers were James McClellan of American Forests Products Industries, Washington, D. C.; Frank C. Kenyon of National Distillers' New York office; and L. E. McCormick, extension forester of Missouri, who made the presentation of the tree farm certificate. Luncheon was served on the banks of Current River in the heart of the tree farm through the courtesy of the owners.

During the afternoon the visiting foresters were taken on a tour of the tree farm under the guidance of Forester Ed Woods.

The Section dinner was served at Current River Lodge, Van Buren, on Friday evening.

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Following a brief business session, Robert H. Clark, Section chairman, turned the program over to Leonard Hall, columnist for the St. Louis *Post-Dispatch*, who served as toastmaster. Among the speakers were William L. Hall of Hot Springs, Ark., a Fellow of the Society; Henry Clepper, executive secretary; and Wm. Winham, T. J. Moss Tie and Lumber Company.

On the second day, the party visited the Mark Twain National Forest to observe plantations established on burned areas and old fields, and release cutting in plantations. The meeting was concluded with an outdoor luncheon served at Noblett Lake, a recreational area originally developed by the Civilian Conservation Corps.

R. E. Crowell served as general chairman of the meeting, and Byron L. Groesbeck as chairman of arrangements. The Section officers present were Robert H. Clark, chairman, and John Burwell, secretary-treasurer.

The meeting was instructive and entertaining, and was marked by perfect weather.

Inland Empire Section Activities

Officers of the Inland Empire Section have formulated plans for section meetings for the year 1949-1950. The first meeting of the fall was held at Pullman, Washington, on October 8, at 9:30 a.m. Several items concerned with Society affairs were on the agenda in order that members who attended the Society's meeting in Seattle the following week could be properly informed of the sentiments of the section membership on these matters. Dr. R. F. Daubenmire, Washington State College, spoke on the subject of "Forest Type Classifications." Luncheon followed the meeting and the Washington State-Oregon football game was the entertainment feature of the afternoon.

A Committe on Society Affairs has been appointed. Its functions will be to collate information and arguments on the many matters referred to the membership and sections by the Society, and to report thereon at meetings. It is believed that this will enable the members to arrive at better informed and more thoroughly considered opinions and, at the same time, replies sought by the Society to such questions should be more expeditiously handled than they have been in the past.

The chairman has also appointed a reporter for the coming year. His duties will be to assist the secretary in the issuance of a periodic newsletter to the section membership and to be responsible for the submission to the JOURNAL of items for the Society Affairs and Forestry News departments.

R. H. SEALE,
Reporter.

Coming Events

New York Section

The New York Section's annual winter meeting will be held in Albany, December 9 and 10, with headquarters at the DeWitt Clinton Hotel.

Professor C. E. Farnsworth of the New York State College of Forestry, Syracuse, is chairman of the Program Committee.

A.A.A.S.

The annual meeting of the American Association for the Advancement of Science will be held in New York City, December 26-31.

Hotel reservation blanks and information about the section programs may be obtained from the association headquarters, 1515 Massachusetts Avenue, N.W., Washington 5, D. C.

California Section Plans December Meeting

California's future needs for wood and the role of government, industry, and the citizen in forestry are to be the topics for discussion at the 1949 annual meeting of the Northern California Section, Society of American Foresters, to be held in San Francisco, December 3.

P. M. Barr, professor of forestry at the University of California and general chairman of the meeting, said he expects attendance this year to equal the turnout of about 400 who attended the past two annual meetings.

The day-long program has been arranged under two themes. For the morning session under the theme of "meeting California's wood needs in the future," a symposium with three speakers has been arranged. Walter S. Johnson, president of American Box Corporation, will discuss the long-range outlook for forest products markets in California. H. J. Andrews, regional forester for the Pacific Northwest Region, U. S. Forest Service, will consider the northwest region as a future source of forest products for California; and H. J. Vaux, University of California School of Forestry, will outline how much California timberland will be needed for future requirements.

The afternoon session has for its theme "relative responsibilities and opportunities of government, industry and citizen in forest conservation and management." William B. Greeley, West Coast Lumbermen's Association, has accepted an invitation to describe the role of forest industry at this symposium. Two other speakers, representing government and private citizens, have been invited to round out the program.

The discussion sessions and the annual banquet will be held at the Sir Francis Drake Hotel in San Francisco.

Elections to Membership

Associate

Kittredge, Frank A., D. C.

Junior

Allan, H. W., Fla.
Anderson, S. L., Jr., Ga.
Armstrong, George, Pa.
Ashley, Roger H., Mich.
Aston, E. R., Wash.
Barzler, W. J., Ore.
Beswick, R. A., Wash.
Bielejec, J. H., N. Y.
Bonner, J. D., Miss.
Braden, E. M., Jr., Tenn.
Brett, Fred, Jr., Fla.
Brinsfield, W. R., Wash.
Britton, L. R., Calif.
Burwell, R. W., Wash.
Campbell, Duncan, N. D.
Carlton, C. F., La.
Carr, C. D., Ga.
Christensen, W. W., Mich.
Clapp, A. K., Calif.
Clark, F. B., Ill.
Cockroft, W. S., Tenn.
Collins, T. E., Wash.
Conger, S. H., Ga.
Corlett, J. B., Wash.
Crawford, J. M., Jr., Ga.
Crider, P. F., Jr., Pa.
Culley, T. S., Jr., Calif.
Davis, R. A., Ga.
DeVriend, A. J., Wisc.
Eastment, R. R., N. J.
England, R. F., Wash.
Exley, G. C., Jr., Ga.
Flink, P. R., N. Y.
Fonda, D. V., N. Y.
Freytag, M. A., Ohio
Garvey, W. E., Jr., Md.
Gatlin, E. R., Jr., Miss.
George, E. H., Wisc.
Giles, T. F., Idaho
Graham, G. C., Ark.
Grist, R. P., Ohio.
Grosh, E. R., Ore.
Hamill, Louis, N. Y.
Hansbrough, T., La.
Harper, R. S., Fla.
Hasek, J. M., Iowa.
Hauberg, J. H., Jr., Wash.
Hazelbaker, D. L., Idaho.
Heinemann, G. L., N. Y.
Hocker, H. W., Jr., Pa.
Hoisington, R. E., N. Y.
Hurlbutt, Boris, Ga.
Johnston, R. B., N. J.
Johnson, R. W., Wash.
Jones, W. H., Fla.
Joos, Peter J., Calif.
Keller, R. C., N. Y.
Kelly, A. W., Mo.
Koch, W. W., N. J.
Labdon, K. B., Jr., N. Y.
Lapham, V. T., La.
Lawrence, P. L., Ga.
Lazara, M. P., Wash.
Leeklider, G. R., Ore.
Lightsey, W. F., Ga.
Link, J. E., Ill.
Lodge, G. R., Mo.
Lovestead, H. S., Iowa.
Marcouiller, J. J., Jr., Wis.
Marron, J. J., Fla.
McDowell, H. G., Wash.
McLean, J. H., N. Y.
McLendon, M. D., Ore.
Meierstein, G. W., Neb.
Meyering, J. R., N. Y.
Minnick, D. W., N. Y.
Miskovsky, M. C., Ill.
Moore, A. D., N. Y.
Mortier, R. L., Wis.
Mouser, W. E., Wash.
Mueser, A. W., N. Y.
Nigro, J. F., N. Y.
Nims, W. H., Jr., S. C.
Nordyke, J. P., Calif.
Orcutt, E. J., Me.
Ott, C. A., Wis.
Phillips, L. L., Ga.
Pietsch, W. W., Iowa.
Powers, R. D., Ore.
Rapp, A. J., Jr., Calif.
Robins, C. M., Idaho.
Rothwell, R. J., N. Y.
Rountree, C. C., Jr., Ga.
Russell, T. E., Idaho.
Sandstrom, A. C., N. Y.
Schmidt, H. N., Wis.
Schultz, C. E., N. J.
Scruggs, J. B., Fla.
Shearer, T. D., N. Y.
Shrum, T. E., Jr., Ore.
Sieber, D. H., Wash.
Simmons, H. W., Fla.
Smith, L. F., Jr., Ga.
Stamey, G. M., Ga.
Strong, D. E., N. Y.
Tetterton, S., S. C.
Van Scoy, L. F., N. Y.
Veverka, R. M., Ohio.
Wainscott, T. L., Ill.
Walker, G. F., Wash.
Walkley, R. B., Canada.
Webb, W. L., Wash.
White, J. A., Wash.
Wicks, W. W., Neb.
Wood, D. D., Wash.
Worstell, R. L., Ore.
Wilson, W. R., Ore.
Wynens, J. C., Ga.
Zellner, R. A., Idaho.
Zimmerman, R. O., N. Y.

Member

Armstrong, G. W., Calif.
Armstrong, M. M., N. Y.
Bauer, D. R., Calif.
Bird, R. L., Mich.
Bonner, Edward, Canada.
Breon, T. F., N. H.
Brown, K. B., Canada.
Brown, R. I., Ark.
Burns, K., Me.
Campbell, W. A., Fla.
Cram, W. D., Canada.
Diehl, R. B., N. H.
Fenton, R. H., Conn.
Ferber, A. E., N. D.
Fogh, I. F., Canada.
Gaiser, R. N., Ohio.
Gossard, S. F., Calif.
Hinson, E., Ga.
Hobbs, S. M., Calif.
Horton, J. S., Calif.
Intorf, P. H., Calif.
Joy, P. L., Fla.
Juntunen, E. H., Wis.
Kern, J. C., Calif.
King, C. K., Me.
King, C. K., Me.
Knoch, H. G., Ga.
Kuzmitz, V. J., Ga.
Lee, J. F., Fla.
Lindl, R., Ohio
Ludwig, G. W., Calif.
Martin, I. R., Ala.
Matthews, C. M., N. H.
McGraw, E. B., Canada.
McKee, E. E., Idaho.
Metcalf, W. S., N. Y.
Molpus, E. L., Fla.
Moore, W. H., Fla.
Morgan, J. T., Ohio.
Muller, C. A., Ala.
Mulvaney, F. E., N. Y.
Nease, A. D., Fla.
Ogrinc, J. P., Minn.
Parr, W. A., Md.
Parsons, G., N. Y.
Phipps, P. H. K., N. H.
Plummer, H. A., Me.
Prince, W. J., Ga.
Rickel, L. A., Calif.
Rowland, C. A., Jr.
Schroeder, P., Mich.
Sealander, I. L., Texas.
Sexton, W. A., S. C.
Seward, J. R., Ohio.
Shaw, E. E., Canada.
Shirley, H. M., Fla.
Spoden, F. G., Jr., Va.
Swinford, K. R., Fla.
Thompson, W. E., N. H.
Wentworth, W. H., Me.
Wiggins, J. E., Jr., D. C.
Wilkinson, W. H., Fla.
Wilson, Robert, Calif.

Reinstated

Junior

Lunsford, H. C., Fla.
Nuite, C. W., S. C.

Announcement of Candidates for Membership

The following names of candidates for membership are referred to the membership for comment or protest. The list includes all nominations received since the publication of the October JOURNAL without question as to eligibility. Names, addresses, education, and endorsements are given. The names have not been passed upon by the Council. Important information regarding the qualifications on any candidate which will enable the Council to take final action with a knowledge of essential facts should be submitted before December 15, 1949. Statements on different men should be submitted on different sheets. Communications relating to candidates are considered as strictly confidential.

Allegheny

Junior Membership

Anderson, W. C., Grad. Student, Pa. State, State College, Pa.; Pa. State, B.S.F., 1948. W. E. White, H. H. Chisman, H. S. Meyer.

Shreve, E. P., Farm Forester, Cons. Comm. of West Virginia, Charleston, W. Va.; W. Va. Univ., B.S.F., 1949. T. Holsoe, W. C. Percival, J. B. Byers.

Veenschoten, J. C., 1950 S. Shore Drive, Erie, Pa.; N. Y. State, B.S.F., 1949. J. S. Illick, L. P. Plumley, J. E. Davis.

Wade, Irving W., Farm Forester, Div. of Forestry, W. Va. Cons. Comm., Wellsburg, Va.; N. Y. State, B.S.F., 1949. H. S. Mosebrook, R. O. Bowen, H. L. Baker.

Zurney, W. E., P. O. Box 44, Manorville, Pa.; Purdue, B.S.F., 1949. B. N. Prentice, T. E. Shaw, C. S. Miller.

Appalachian

Junior Membership

Allen, B. L., Farm Forester, N. C. Dept. of Cons., Rocky Mount, N. C.; N. C. State, B.S.F., 1949. R. J. Preston, G. K. Slocum, L. Wyman.

Boswell, A. W., Forester-Surveyor, Z. B. Pate, Inc., Laurel Hill, N. C.; N. C. State, B.S.F., 1949. C. M. Kaufman, G. K. Slocum, R. J. Preston.

Howell, W. E., Forester, U.S.F.S., Columbia, S. C.; Univ. of Fla., B.S.F., 1942. E. T. Ziegler, C. G. Geltz, H. S. Newins.

Marshburn, W. J., Jr., Farm Forester, N. C., Div. of Forestry, Raleigh, N. C.; N. C. State, B.S.F., 1938. G. K. Slocum, R. J. Preston, L. Wyman.

Sebring, Paul E., Asst. Forester, West Virginia Pulp and Paper Co., Summerville, S. C.; Appalachian (Aff. member, 1943).

Ward, J. R., Asst. to Dist. Forester, Int. Paper Co., Georgetown, S. C.; Univ. of Ga., B.S.F., 1948. D. J. Weddell, A. E. Patterson, A. C. Worrell.

Central Rocky Mountain

Junior Membership

Malencik, W. J., Box K, Mecker, Colorado; Utah State, B.S.F., 1949. C. M. Bowen, J. W. Floyd, T. W. Daniel.

Central States

Junior Membership

Bowser, C. R., Rt. 1, Lafayette, Indiana; Purdue Univ., B.S.F., 1949. T. E. Shaw, B. N. Prentice, C. S. Miller.

Brown, J. H., 419B. Hawthorne Lane, East Lansing, Michigan; Mich. State, B.S.F., 1949. P. A. Herbert, Karl Dressel, Earl J. Hodgkins.

Kent, B. F., Dist. Farm Forester, Univ. of Ill., Charleston, Ill.; Univ. of Mich., B.S.F., 1942. J. N. Spaeth, D. A. Kulp, C. S. Walters.

Schmitt, D. M., 739 Montrose Ave., Chicago, Ill.; Utah State, B.S. (Forestry), 1949. J. W. Floyd, L. M. Turner, T. W. Daniel.

Van Matre, H. R., Partner, Van Matre Mfg. Co., New Castle, Indiana; Purdue Univ., B.S.F., 1949. B. N. Prentice, T. E. Shaw, C. S. Miller.

Columbia River

Junior Membership

O'Neal, R. E., Engineer, Weyerhaeuser Timber Co., Longview, Wash.; Iowa State, B.S.F., 1949. J. M. Hisey, D. W. Borglum, D. N. Jeffers.

Riddagh, D. W., Forester, Weyerhaeuser Timber Co., Castle Rock, Wash.; Pa. State, B.S.F., 1949. W. C. Bramble, W. E. White, H. H. Chisman.

Gulf States

Associate Membership

Martin, H. C., Tech. Director, Brown Paper Mill Co., Inc., Monroe, La.; Lehigh Univ., B.S.C.E., 1934. Gulf States.

Junior Membership

Robertson, R. R., Dist. Forester, Miss. Forestry Comm., Jackson, Miss.; La. State, B.S.F., 1948. R. W. Hayes, C. O. Minor, W. M. Palmer.

Inland Empire

Junior Membership

Barnett, S., Proj. Farm Forester, State of Idaho, Boise, Idaho; Univ. of Idaho, B.S., (Forestry), 1948. D. S. Jeffers, E. Wohletz, V. Ravenscroft.

Burlison, V. H., Asst. Ext. Forester, Univ. of Idaho, Moscow, Idaho; Univ. of Idaho, B.S., (Forestry), 1943; M.S., 1949. E. Wohletz, T. S. Buchanan, M. E. Deters.

Intermountain

Junior Membership

Braithwaite, E. G., Fire Control and Recreation Asst., Wasatch Nat'l. Forest, Salt Lake City, Utah; Utah State, B.S., (Forest Mgmt.), 1949. J. W. Floyd, L. M. Turner, T. W. Daniel.

Colton, G. M., R.F.D. 1, Vernal, Utah; Utah State, B.S., (Forest Mgmt.), 1949. J. W. Floyd, L. M. Turner, T. W. Daniel.

Fluckiger, D. T., Asst. Rgr., Bridger Nat'l. Forest, Kemmerer, Wyo.; Utah State, B.S., (Forest Mgmt.), 1949. J. W. Floyd, L. M. Turner, T. W. Daniel.

Frisby, W. E., P. O. Box 134, Payson, Utah; Utah State, B.S., (Forestry), 1949. J. W. Floyd, L. M. Turner, T. W. Daniel.

Fry, G. B., Ft. Duchesne, Utah; Utah State, B.S., (Forestry), 1949. J. W. Floyd, L. M. Turner, T. W. Daniel.

Koch, C. B., Fire Suppression, U.S.F.S., Challis, Idaho; Univ. of Idaho, B.S., (Forestry), 1947. D. S. Jeffers, E. Wohletz, A. M. Slipp.

Madden, T. M., 687 Canyon Rd., Logan, Utah; Utah State, B.S., (Forestry), 1949. C. M. Bowen, L. M. Turner, T. W. Daniel.

Whipple, E. L., Student, Utah State Agric. College, Logan Utah; Utah State, B.S., (Forestry), 1949. J. W. Floyd, L. M. Turner, T. W. Daniel.

Wightman, M. D., 235 N. First W., Payson, Utah; Utah State, B.S., (Forestry), 1949. C. M. Bowen, L. M. Turner, T. W. Daniel.

Kentucky-Tennessee

Junior Membership

Bucholz, J. A., Public Relations, Div. of Forestry, Frankfort, Ky.; Iowa State, B.S.F., 1949. G. B. Hartman, E. Gardiner, R. B. Campbell.

New England

Affiliate Membership

Dubreuil, R. F., Blister Rust Foreman, Conn. Agric. Exp. Sta., Canaan, Conn. New England.

Junior Membership

Fiske, L. M., Jr., Forest Prods. Asso., New Haven, Conn.; Dartmouth College, A.B., 1946; Yale, M.F., 1949. H. H. Chapman, F. E. Dickinson, H. J. Lutz.

Marshall, P. E., Forestry Aide, U.S.F.S., Bangor, Maine; Univ. of Me., B.S.F., 1949. R. I. Ashman, G. Baker, A. G. Randall.

Pekar, M. A., 101 Goddard Ave., Bridgeport, Conn.; N. C. State, B.S.F., 1949. C. M. Kaufman, G. K. Slocum, R. J. Preston.

Solow, R. I., Sales Engineer, Keller Products Inc., Manchester, N. H.; N. C. State, B.S.F., 1948; Yale, M.F., 1949. G. A. Garratt, F. E. Dickinson, F. F. Wangaard.

Member Grade

Hyde, G. R., Consulting Forester, Nashua, N. H.; Univ. of N. H., B.S.F., 1929; Harvard Univ. M.F., 1932. Re-

New York

Junior Membership

Berger, J. W., Salesman, Colonial Home Improvement Co., Syracuse, New York; N. Y. State, B.S.F., 1949. L. P. Plumley, R. G. Unger, R. N. Hutchinson.

Brown, O. W., Jr., Forester, Cons. Dept., Canton, N. Y.; N. Y. State, B.S.F., 1924. L. P. Plumley, R. G. Unger, F. E. Carlson.

Shone, Robert T., 42 Day Place, Rochester, New York; N. Y. State, B.S.F., 1949. J. S. Illick, J. E. Davis, R. G. Unger.

Northern California

Affiliate Membership

Holmes, O. L., Logging and Lumbering Safety Engineer, Calif. Div. of Industrial Safety, San Francisco, California. Northern California.

Junior Membership

Millar, R. R., 320 Sequoia Ave., Palo Alto, Calif.; Utah State, B.S., (Forest Mgmt.), 1949. J. W. Floyd, L. M. Turner, T. W. Daniel.

Striplin, H. A., Jr., Asst. Forest Tech., Calif. State Div. of Forestry, Santa Rosa, California; Univ. of Calif., B.S.F., 1948. F. S. Baker, J. Kittredge, M. Krueger.

Northern Rocky Mountain

Junior Membership

Faurot, J. L., Forestry Aid, U.S.F.S., Trout Creek Mont.; Mont. State, B.S.F., 1949 P. E. Bruns, K. E. Moore, F. G. Clark.

Palmer, A. N., Seasonal Park Rgr., Nat'l. Park Service, Yellowstone Park, Wyo.; Univ. of Idaho, B.S., (Forestry), 1949. D. S. Jeffers, E. Wohletz, A. M. Slipp.

Richards, D. L., Seasonal Park Rgr., Yellowstone Nat'l. Park, Wyo.; Mich. State, B.S.F., 1948. P. A. Herbert, Karl Dressel, P. W. Robbins.

Saltsman, J. I., Asst. Rgr., U.S.F.S., Trout Creek, Mont.; Montana State, B.S.F., 1948. P. E. Bruns, F. G. Clark, M. S. Morris.

Ozark

Junior Membership

Maddox, J. W., Dist. Forester, Cons. Comm., Jefferson City, Mo.; Univ. of Mich., B.S.F., 1941. C. H. Kirk, E. W. Woods, H. S. Nygren.

Pearson, M. W., 1715 S. Oronogo St., Webb City, Mo.; Utah State, B.S., (Forestry), 1949. C. M. Bowen, J. W. Floyd, T. W. Daniel.

Tomlinson, R. V., Block Forester, Fordyce Lbr. Co., Fordyce, Ark.; La. State, B.S.F., 1949. R. H. Clark, H. L. Williston, C. X. Grano.

Southeastern

Affiliate Membership

Dennis, E. E., Dist. Mgr., Gibson Paperwood Co., Inc., Tallahassee, Florida. Southeastern.

Junior Membership

Attaway, C. F., Asst. State Forester, Ala. Div. of Forestry, Montgomery, Ala.; Tulane Univ., B.E.C.E., 1922. Southeastern (Aff. member, 39R45).

Attaway, H. B., 30 Walk St., St. Augustine, Fla.; Univ. of Fla., B.S.F., 1949. E. A. Ziegler, J. W. Miller, Jr., J. E. Dickinson.

Barnes, C. S., County Rgr., Ga. Forestry Comm., Atlanta, Ga.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, D. J. Weddell, A. C. Worrell.

Brown, C. L., Asst. Dist. Forester, Ga. Forestry Comm., Gainesville, Ga.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, A. C. Worrell, D. J. Weddell.

Chapman, W. L., Route 1, Sale City, Ga.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, D. J. Weddell, A. C. Worrell.

Cloud, M. C., Jr., Grad. Student, Univ. of Ga., Athens, Ga.; Univ. of Ga., B.S.F., 1940. A. E. Patterson, D. J. Weddell, A. C. Worrell.

Gandy, J. A., Chemist, Armstrong Cork Co., Macon, Ga.; Purdue Univ., B.S.F., 1942; Duke Univ., M.F., 1947. W. E. Oppenheim, D. J. Fountain, B. F. Grant.

Garland, W. M., Proj. Forester, Florida Forest Service, Tallahassee, Fla.; Univ. of Ga., B.S.F., 1948. D. J. Weddell, A. E. Patterson, A. C. Worrell.

Greer, E. S., Grad. Student, Univ. of Ga., Athens, Ga.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, D. J. Weddell, A. C. Worrell.

Griffin, E. C., Forestry Aid, U.S.F.S., Tallahassee, Fla.; Univ. of Fla., B.S.F., 1949. J. W. Miller, Jr., E. A. Ziegler, T. G. Herndon.

Hanson, J. W., Rgr., Ga. Forestry Comm., Macon, Ga.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, D. J. Weddell, A. C. Worrell.

Knight, V. J., Instructor of Forestry, Abraham Baldwin College, Tifton, Ga.; Univ. of Ga., B.S.F., 1949. A. E. Patterson, D. J. Weddell, A. C. Worrell.

Lindgren, A. H., Student, Univ. of Miami, Miami, Fla.; Univ. of Fla., B.S.F., 1949. J. W. Miller, Jr., E. A. Ziegler, T. G. Herndon.

Miller, J. E., Jr., Engr., Land Dept., Tenn. Coal, Iron, and R. R. Co., Birmingham, Ala.; Duke, A.B., (Botany) 1947; M.F., 1948. M. C. Hogelin, S. G. Spruiell, D. E. Hampe.

Power, L. M., Proj. Forester, Fla. Forest Service, Lake City, Fla.; Univ. of Fla., B.S.F., 1947. E. A. Ziegler, T. G. Herndon, J. W. Miller, Jr.

Shoptaw, G. C., Mgr., Wood Procurement Dept., Union Bag and Paper Corp., Savannah, Ga. Southeastern (Aff. member, 1944).

Southwestern

Junior Membership

Burns, R. L., Seasonal Rgr., Nat'l. Park Service, Grand Canyon, Ariz.; Colo. A & M., B.S.F., 1949. W. J. Kennedy, J. M. Eden, S. T. Carlson.

Carey, R. E., Forester, U.S.F.S., Coconino Nat'l. Forest, Flagstaff, Ariz.; Iowa State, B.S.F., 1949. N. E. Johnson, Ira Fyock, L. Dunford.

Hickman, R. D., Forester, U. S. Indian Service, Peach Springs, Ariz.; Colo. A & M., B.S.F., 1946. H. Weaver, V. L. A. Smith, G. S. Meagher.

Johnson, H. G., Dist. Forest Rgr., U.S.F.S., Holbrook, Ariz.; Univ. of Minn., B.S.F., 1933. Reinstatement.

Schuft, P. H., Dist. Rgr., Nat'l. Park Service, Grand Canyon Nat'l. Park, Grand Canyon, Ariz.; Univ. of Minn., B.S.F., 1936. S. T. Carlson, W. J. Kennedy, J. M. Eden.

Member Grade

Berry, F. H., Forester, Coconino Nat'l. Forest, Flagstaff, Ariz.; Duke Univ., B.S.F., 1943; M.F., 1944. Southwestern (Jr. member, 1944).

Carr, Edward T., Dist. Forest Rgr., Coconino Nat'l. Forest, Flagstaff, Ariz.; Mich. State, B.S.F., 1933. Southwestern (Jr. member, 36R48).

Rawie, C. D., Forest Supv., Navajo Service, Window Rock, Ariz.; Oregon State, B.S.F., 1928. Reinstatement.

Weil, Edwin H., Jr., Forester, Coconino Nat'l. Forest, Flagstaff, Ariz.; Univ. of Mich., B.S.F., 1943. Southwestern (Jr. member, 1944).

Washington

Junior Membership

Tribbett, V. A., Chief, Branch Forest Protection, Bur. of Land Management, Washington, D. C.; Iowa State, B.S.F., 1936. Reinstatement.

Wisconsin-Upper Michigan

Junior Membership

Castonguay, M. I., Forester, Wis. Cons. Dept., Madison, Wis.; Univ. of Mich., B.S.F., 1948. W. G. Wilson, C. Neallin, Ivan Hassler.

Jordan, W. R., Dist. Forester, Wis. Cons. Dept., Madison, Wisconsin; Iowa State, B.S.F., 1949. C. T. Smith, R. Schwartz, R. W. Abbott.

Sandretto, R. P., Box 413, Gile, Wis.; Utah State, B.S., (Tbr. Mgmt.), 1949. J. W. Floyd, L. M. Turner, T. W. Daniel.

Underwood, N. B., Forester, Wis. Cons. Dept., Madison, Wis.; Mich. State, B.S.F., 1948. C. T. Smith, R. Schwartz, R. W. Abbott.

The following have been Junior members for at least 6 years and are eligible for automatic advancement to Member grade. The Sections have certified them as actively engaged in forestry work and competent to represent the profession honorably and capably in the performance of their duties.

Allegheny

Allison, A C., % W. Va. State Forest Nursery, Leasage, W. Va.
Augustine, M. T., Professional Bldg., Annapolis, Md.
Bowen, R. O., Sistersville, W. Va.
Curtin, G. D., Goff Bldg., Clarksville, W. Va.
Felton, P. M., R. D. No. 1, Norristown, Pa.
German, G. M., Blain, Pa.
Haigh, T. W., 414 State House Annex, Trenton 7, N. J.
Ingling, C. R., Union Bridge, Md.
Ludwig, W. D., Jr., 627 Philadelphia Ave., Chambersburg, Pa.
Marra, George, Div. of Forestry, W. Va. Univ., Morgantown, W. Va.
Morgan, H. H., 627 Hummel Ave., Lemoyne, Pa.
Stravinski, Carl, 401 Main St., Laurel, Md.
Vogler, Anton H., 209 State Street, Russell, Pa.
Wagner, S. R., Pocono Lake, Pa.
Weitzman, Sidney, U.S.F.S., Elkins, W. Va.

Central States

Miles, Eliot W., Acting Dist. Forester, Ohio Div. of Forestry, Wooster, Ohio.
Stiehl, James H., 77 W. Washington St., Chicago, Ill.

New England

Brands, Andrew, Box 122, Plymouth, N. H.
Cranch, Richard C., Highview Ave., Norwalk, Conn.
Kuehlke, C. G., Box 586, Ansonia, Conn.

Puget Sound

Bennett, W. A., Box 356, Tacoma, Wash.
Bryden, C. M., Lakesie, Wash.
Buell, Edward, Menlo, Wash.
Cameron, John G., Elbe, Wash.
Catlow, W. V., 404 Sunset Drive, Bellingham, Wash.
Corson, K. P., Land Mgmt., Issaquah, Wash.
DesCamp, Raymond M., 1741 Marion St., Enumclaw, Wash.
Donaldson, Don W., 1514 East 7th, Olympia, Wash.
Dunham, C. B., 313 First Ave., B. C., Canada.
Durfee, H. A., 822 Queen Anne Ave., Seattle, Wash.
Gillis, J. R., Port Angeles, Wash.
Hall, Ward, Jr., Quinault Ranger Sta., Quinault, Wash.
Helgeson, R. G., 1011 North Adams, Tacoma, Wash.
Holl, Carl, 1320 Ferdinand St., Seattle 8, Wash.
Hicks, V. E., Darrington, Wash.
Holloway, G. E., 524 3rd Ave. S., Kent, Wash.
Homolac, H. L., Box 329, Goldbar, Wash.
Joyer, Vernon J., Box 881, Juneau, Alaska.
Liersch, J. E., Vancouver, B. C., Canada.
Magelssen, M. W., Route 1, Box 25, Stanwood, Wash.
McCormick, H. F., Okanogan, Wash.
Mitchell, J. R., Okanogan, Wash.
Moisio, W. J., U.S.F.S., Marblemount, Wash.
Morganroth, E. S., 2702 39th S. W., Seattle, Wash.
Neumen, F. W., Box 253, Weyerhaeuser Timber Co., Chehalis, Wash.
Nyberg, H., Glacier, Wash.
Pearson, C. H., Route 7, Box 47, Olympia, Wash.
Peltier, E. W., Cle Elum, Wash.
Pelto, W. E., Seattle, Wash.
Peter, R. K., Snider Rgr. Sta., Port Angeles, Wash.
Petzold, A. O., Shelton, Wash.
Raubach, R. T., Aberdeen, Wash.
Rummel, R. S., U.S.F.S., Wenatchee, Wash.
Saterbo, B. C., North Bend, Wash.
Smyth, A. V., Tacoma, Wash.
Soderland, D. R., Belevue, Wash.
Staebler, G., Olympia, Wash.
Thomson, F. M., Port Angeles, Wash.
Touzeau, E. G., Northwest Bay Logging Co., Ltd., B. C., Canada.
Vanden Oever, E. H., Seattle 66, Wash.
Wehrle, A. A., Tacoma Star Route, Tacoma, Wash.
Wellwood, R. W., Vancouver, B. C., Canada.
Weswig, C. O., 8516 Stone Ave., Seattle 5, Wash.
Wick, P. N., Camp Grisdale, Shelton, Wash.
Wilson, D. W., U.S.F.S., Tonasket, Wash.
Wood, W. R., 1205 21st N., Seattle, Wash.
Wright, T. G., 4606 West 13th Ave., Vancouver, B. C., Canada.
Wyman, Max H., Seattle 99, Wash.
Young, R. N., Forks, Wash.

Southeastern

Breckenridge, P. D., % Timber Lands, Columbus, Ga.
Dyer, C. D., Ga. Agric. Ext. Service, Tifton, Ga.
McFarland, T. A., Forest Consultant, Sandersville, Ga.

Forestry News

Compiled by ROBERT D. HOSTETTER, *Assistant Executive Secretary*

Chamber of Commerce Sponsors Meetings in Vermont, Kentucky

October saw businessmen in two states joining with professional leaders and other citizens in support of state and local agencies for the promotion of better forestry.

A state-wide forestry conference to develop Vermont Forests and make larger contributions to Vermont prosperity was held in the State Capitol at Montpelier on September 30 and October 1. Following a panel discussion on the question "Who is Responsible for our State Forests?" the conference approved the American Forest Products Industries' "More Trees for Vermont" program which promises to assume a heavy part in a larger forestry plan for the State.

Another state-wide conference of timberland owners, lumber manufacturers, foresters and others was held in Louisville on October 28 at the call of Kentucky's Governor Earle C. Clements. Better protection of nearly 12 million acres of forest in Kentucky was recognized as of such importance to the future economy of the State that a committee was appointed to launch and carry through a KEEP KENTUCKY GREEN program.

Each conference was initiated by the State Chamber of Commerce which took the lead in arranging participation by the Governor, the State Forester and the local associations interested in forestry. Each conference fulfills recommendations made in November 1949 by the Directors of the Chamber of Commerce of the United States, that local chambers be encouraged to help businessmen and business leaders develop suitable forest programs for their individual properties, and explore ways of applying sound forestry practices to all forest lands. It also recommended that the programs be developed in full cooperation with local, state and national forestry organizations. To carry out these proposals, Harris Collingwood has served since the first of the year as Forestry Consultant to the National Chamber, working with David J. Guy, Manager of the Natural Resources Department.

G. HARRIS COLLINGWOOD

The forestry meetings in Vermont and Kentucky helped activate the Chamber's policy declaration on forestry, which Mr. Collingwood helped revise and which was adopted by the Chamber during its 37th Annual Meeting held in Washington last May. These and future conferences are designed to help businessmen realize that forests are important to the economy of each state; to show what is needed to improve forest conditions, state by state; to determine what businessmen can do to help improve forest conditions in their state; and to provide channels through which businessmen and others can help achieve more satisfactory forest conditions.

Heroic Actions Described

"Heroes In Green," by Harold Rogers, in the September *Sports Afield* magazine relates some of the hazardous times experienced by U. S. Forest Service personnel.

The heoric action of Clarence B. Sutliff in rescuing the pilot of a plane in which they crashed near a forest fire is described as is the case of Ranger Glen Smith who found it necessary to augment his vocal persuasiveness with a .30-30 to prevent 40 armed Cheyenne Indians from poaching deer.

Other situations in which foresters acted heroically are also cited.

Cooperative Fish Research Unit Formed in Colorado

America's first cooperative fish research unit, drawn up along the lines of a Cooperative Wildlife Research Unit program, has been established at Colorado A. and M. College.

It will teach courses in fish research and management, will emphasize research on warm-water fish in particular, and has been established through an agreement among the U. S. Fish and Wildlife Service, the college, and the Colorado Game and Fish Commission. Heading the program will be Dr. William C. Beckman, formerly with the Institute for Fisheries Research at the University of Michigan. Establishment of this new unit marks a milestone of progress toward improved management and restoration of sport fishing and may mark the beginning of a national program comparable to that which has contributed so much toward better management of warm-blooded wildlife, according to the Wildlife Management Institute.

Farragut College Closes Doors

Farragut College and Technical Institute, founded three years ago on the site of the former Farragut Naval Training Center in northern Idaho, has closed its doors and gone out of existence. Its closure is attributed to lack of funds and the dwindling of enrollment with the passage of the peak in veterans' educational demand.

R. H. Seale, who for the past two years was in charge of forestry instruction at Farragut, is now on the staff of the University of Idaho School of Forestry.

Weston Takes Advisory Job

Ray F. Weston has retired from active work as Woods Manager-South for Hollingsworth & Whitney Co., although he is now serving his company's Boston office as advisory forester.

His home address is 103 Levert Avenue, Mobile 17, Ala.

Forestry Legislation

Forests

H.R. 5839 (S. 2398) to facilitate and simplify the work of the U. S. Forest Service, which passed the House on August 15, was reported favorably to the Senate by the Senate Committee on Agriculture and Forestry on September 13. Strong opposition has been voiced by the National Wool Growers Association. Known as the omnibus bill of the Forest Service, it would provide for range improvements from grazing collections, purchase of tree and forage plant seed and nursery stock, aerial facilities for forest management, deposits for brush and debris disposal, seeding leased range land, and would provide for other measures deemed to enable the Forest Service to operate more efficiently.

S.J. Res. 24 to provide for forest access roads passed the Senate on August 9 and was referred to the House Committee on Agriculture.

H.R. 2296 to revise the Norris-Doxey Act was considered by a joint Senate-House committee on August 26, but no compromise was reached.

Recreation

H.R. 3440 to provide an adequate eastern entrance road to Rocky Mountain National Park in Colorado became Public Law No. 263 on August 24.

H.R. 2419 (by Tackett of Arkansas) (and S. 2409) relates to the disposition of moneys received from the national forests. As ammended by the House Committee on Agriculture, the bill would provide that ten percent of receipts be set aside for the development, maintenance, and operation of recreational resources and areas, including wildlife resources, in any of the national forest areas. Reported to the House on August 22, House Report No. 1296.

S.J. Res. 53 to provide for reforestation and revegetation of national forests was cleared for Presidential consideration on September 29.

Wildlife

S. 1746, the Dingell Bill to provide that the United States shall aid the States in fish restoration and management projects, was vetoed by the President on October 12. He said, "It is believed that the 'earmarking' of Federal tax revenue, as provided in the bill, constitutes undesirable tax and fiscal policy."

Wildlife Fellowship Offered

A fellowship carrying a stipend of $1,200 a year and expenses is being sponsored by the National Wildlife Federation for research into techniques and methods of making motion picture films specifically for gaining support and understanding of sportsmen for sound wildlife research and management practices.

Work will be initiated at the Massachusetts Cooperative Wildlife Research Unit at Amherst under the supervision of Dr. William G. Sheldon, unit leader, and will fulfill, in part, the requirements of a graduate student seeking an M.S. in wildlife management at the University of Massachusetts. The project will consist of screening existing colored films now available and making up a film on one phase of wildlife management in a given area or group of states. Such a film would be in conformity with a prepared scenario and script and would ultimately become the property of the National Wildlife Federation.

Interested candidates should apply direct to William G. Sheldon, leader, Cooperative Wildlife Research Unit, French Hall, University of Massachusetts, Amherst, Mass.

Hold Forestry Commemoration

Nekoosa-Edwards Paper Company celebrated its twenty-fifth year of industrial forestry activities on October 4 and 5.

Field trips and informal talks by national authorities in the field of forestry and allied industries were featured. Tree planting demonstrations, thinning operations, fire lane maintenance, a general survey of forest areas, and fire control methods and equipment were included.

Fred G. Kilp is forester for this company.

Seattle Times Urges Forestry

In commenting on a report prepared by the West Coast Lumbermen's Association the editors of the *Seattle Times* said, in part: "The report serves to show how inseparably the destiny of Washington and Oregon is linked with the forests. It serves also to emphasize how vital it is that the citizenry as a whole cooperate in the advancement of all measures to insure better management, reforestation, prevention of fire and perpetuity of production in all the forest lands, public and private, of the region."

Minnesota CIO Favors S.1820

On record as being in favor of U. S. Senate Bill 1820, Senator Clinton P. Anderson's bill to provide for the establishment of forest practices on privately owned land, is the Minnesota state C.I.O. convention which met in St. Paul on September 9, 10, and 11.

The convention also favored allowing the U. S. Forest Service to carry on its own logging operations where insects, fire, or disease have destroyed green national forest timber.

It also recommended that stronger enforcement of Minnesota's forest practices act should be undertaken.

FPRS Meets at Durham, N. C.

"Utilization of Wood Waste" will be discussed by nationally known forest products experts at the meeting of the Virginia-Carolinas Section of the Forest Products Research Society at Duke University, Durham, N. C., on November 4. Participants include Dr. Edward G. Locke, C. P. Winslow, and J. D. Lincoln.

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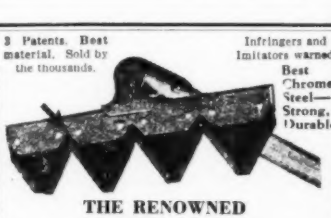
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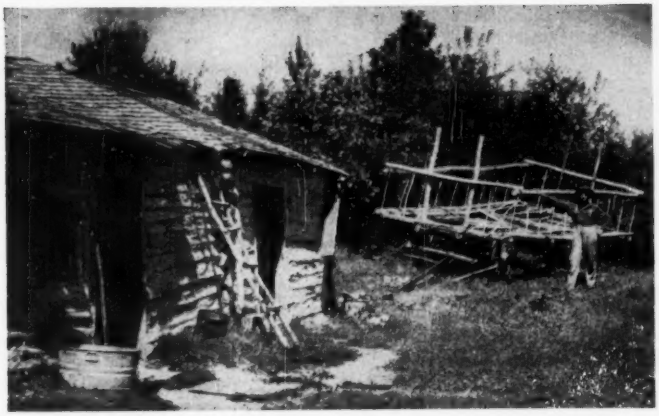

Turtle Mountain Indians Build Aspen Hayracks

Manufacture of haystacks, such as the one illustrated above, provided Turtle Mountain Indians with an added source of income during the recent haying season. Constructed of aspen poles, the racks are sold for eight or nine dollars to a lumber yard in Dunseith, N. D. for resale to farmers in the area who report that the racks compare favorably with those conventionally constructed of lumber.

Aspen poles, with mud chinking, were also used to construct the house pictured above. The ladder leaning against the wall is also made of aspen.

Missouri Appoints Polk, Hortin

Robert E. McDermott has been awarded a teaching fellowship in botany at Duke University where he will work in botany and forestry toward a doctor's degree. He has been granted a two-year leave of absence from the forestry department of the University of Missouri to pursue his work at Duke University.

R. Brooks Polk and Ross Hortin have been appointed to the staff of the Missouri department of forestry to replace Mr. McDermott. These men will devote approximately half of their time to forest research. Mr. Polk has a B.S. degree from the University of Florida and an M.S. degree from Montana State University. He served as an instructor in the Department of Forestry at Alabama Polytechnic Institute during the school year 1947-48. Mr. Hortin received his B.S. degree from Michigan State College and his M.F. degree from the Duke School of Forestry.

Warden Applications Taken

Applications for conservation wardens are being accepted by the Wisconsin Bureau of Personnel, Madison. To qualify a man must be between 21 and 30, and be in good physical condition. Salaries are from $195 to $240 a month plus a cost-of-living bonus of $37.

Lake States Logging Congress Features Diversified Program

A parade, equipment exhibits and demonstrations, two sessions dealing with the technical aspects of logging and milling, and a number of prominent speakers were featured at the fourth annual Lake States Logging Congress held at Ironwood, Mich. on September 22, 23, and 24.

Mechanization of the pulpwood industry, the program of safety to reduce production costs in the timber industry, and results of sustained yield cutting practices were among the subjects discussed.

Cameron Sells Tree Seeds

John G. Cameron is now engaged in the tree seed business at Roy, Wash. He was with Weyerhaeuser Timber Company at Tacoma, Wash., prior to his service in the armed forces and more recently engaged in logging and consulting forester services with Kirk R. Cooper of Tacoma.

Forest Conservation Committee Formed in Pacific Northwest

Reorganizing as an independent group on September 19, the former joint committee on forest conservation of the West Coast Lumbermen's Association and the Pacific Northwest Loggers Association is now known as the Forest Conservation Committee of Pacific Northwest Forest Industries. It will be financed by its own contract membership.

Executive committee chairman is E. P. Stamm, Crown Zellerbach, Portland. George L. Drake, Simpson Logging Co., Shelton, Wash., is vice chairman, and W. D. Hagenstein was appointed forest engineer in charge of development of forest management.

Members of the executive committee are Clyde S. Martin, Weyerhaeuser Timber Co., Tacoma, Wash.; Edmund Hayes, Portland; Corydon Wagner, St. Paul & Tacoma Lumber Co., Tacoma; Charles Fox, Cascades Plywood Corp., Portland; Carl V. Sahlin, Puget Sound Pulp & Timber Co., Bellingham, Wash.; R. F. Morse, Long-Bell Lumber Co., Longview, Wash.; and Floyd Hart, Timber Products Co., Medford, Ore.

W. B. Greeley, Seattle was elected advisor for the group, and ex officio members are H. V. Simpson, West Coast Lumbermen's Association, and E. T. Clark, Pacific Northwest Loggers Association.

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Nelson S. Rogers (1891-1949)

Nelson S. Rogers, state forester of Oregon for the past nine years, died on September 18 at the age of 58.

Notable achievements during his term of office included the passage of the Oregon forest conservation act, the first comprehensive state law to regulate private cutting in the public interest; improvement of protection legislation; and passage of the forest rehabilitation act this year.

NELSON S. ROGERS

He was raised in Oregon's timber country and received a BA degree from Pacific University in 1920. Ten years later, after several years of experience as a district warden in the state forestry department, he was graduated from the University of Washington with a BS degree in forestry.

For ten years he was a valuation engineer with the Oregon tax commission, during which time he improved timber appraisal methods and developed a manual for appraising the wood working industry which is still used.

Wohletz Named Research Head

Professor Ernest Wohletz was appointed associate director of the forest, wildlife, and range experiment station at the School of Forestry, University of Idaho, effective July 1st. He has direct responsibility for all of the research and experimental work of the station, which has increased greatly during the past several years.

Coordination of Activities Deemed Conservation Need

Recommendations of a panel on conservation education which met on September 12 in connection with Michigan's Upper Peninsula Forestry Conference pointed the way toward more effective public participation in conservation of renewable resources.

Panel recommendations included: 1. required conservation training for teachers, both while in college and after, 2. coordination of summer camp instruction and the compilation and dissemination of source material by the State Department of Public Instruction, 3. integration of conservation in courses now taught in elementary schools, 4. conservation training of prospective county agents, 5. adult education in conservation.

P. A. Herbert and Samuel Dana were members of the panel.

Mahogany Regeneration Studied

F. Bruce Lamb has recently become engaged in a research project to determine the natural, economic, and political factors relating to the regeneration of mahogany in tropical America. The project is under the joint supervision of the University of Michigan and the Inter American Institute of Agricultural Sciences at Turrialba, Costa Rica.

Mr. Lamb is currently gathering information in Central America that is to be used in developing a coordinated program in regeneration of the mahogany resource.

Oregon Alcohol Plant Leased

Three Georgians have leased the experimental alcohol plant which was built at Springfield, Oregon during the war to produce ethyl alcohol from wood waste.

Term of the lease is for three years. Charles B. Hudson, William S. Hudson, and Mrs. W. E. Mitchell of Americus, Ga. will rehabilitate the plant and make changes estimated to cost about $300,000.

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Lumber Orders Increase

Records of a year's standing fell as Douglas-fir sawmills of Washington and Oregon took an average of 182,709,000 board feet of lumber orders weekly during August, said H. V. Simpson, executive vice president of the West Coast Lumbermen's Association. Not since August, 1948, have West Coast fir mills been offered this volume of business.

A sharp upturn in demand increased unfilled orders of fir mills by nearly 100 million feet in August over July Simpson said. Depleted retail lumber stocks throughout the country, now being filled to meet stepped-up home building and heavier industrial and public construction were given credit for the improved market by the lumber leader.

AFPI Hires Assistant Manager

Edwin R. Butler has joined American Forest Products Industries, Inc., Washington, D. C., as assistant managing director. Before coming to AFPI he was public relations director for the Southern Hardwood Producers, Inc., Memphis, Tenn.

In making the announcement of Butler's appointment, Managing Director Charles A. Gillett said Butler is well qualified for the position due to his 26 years experience in the advertising, editorial, art and publishing fields, as well as his considerable experience in lumber industry public relations work.

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Botanical Congress Schedules Forestry Sessions and Trips

The Seventh International Botanical Congress, to be held in Stockholm, Sweden, July 12-20, 1950, will embrace several sections of interest to foresters, and three forest excursions, both before and after the meeting, are included among the plans for the Congress. The Congress sections will be: agronomic botany, cytology, experimental ecology, experimental taxonomy, forest botany, genetics, morphology and anatomy, mycology and bacteriology, nomenclature, palaeobotany, phytogeography (with comparative ecology), phytopathology, plant physiology, taxonomy—cryptograms, and taxomomy—phanerograms.

Preliminary applications for membership are now being accepted, and further information concerning registration, costs of excursions, and details of program may be obtained from Dr. Ewert Aberg, secretary-general, international Botanical Congress, Uppsala 7, Sweden.

TECO Sponsors Design Contest

As a lumber trade promotion activity Timber Engineering Company is conducting a $5,000 prize competition among architects, draftsmen, and students for the best designs of an eight-family garden-type apartment building designed in wood with a wood exterior.

The rules of the contest provide that the designs shall employ in their roof framing a wood trussed rafter using TECO timber connectors in their main joints in accordance with typical designs, and use of Trip-L-Grip framing anchors where needed is also called for.

Requests for contest rules and conditions should be addressed to Contest Secretary, Wood Garden Apartment Design Contest, 1319-18th Street, N.W., Washington, D. C. The contest closes January 15, 1950.

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Williams Heads Montana School

Ross A. Williams, former chief of the regional forestry division of the U. S. Soil Conservation Service at Lincoln, Neb., became dean of the Montana State University School of Forestry on September 19. He succeeds Dr. Kenith P. Davis, who resigned the deanship last spring to join the University of Michigan forestry faculty.

ROSS A. WILLIAMS

Williams, a 1921 graduate of the Montana State University forestry school, earned his master of forestry degree at Yale University and took work toward his doctorate at the University of Michigan. He is a native of Kansas.

After his graduation from the Yale school of forestry, Williams taught at New York State College of Forestry at Syracuse. He resigned his professorship there in 1935 to take the position with the Soil Conservation Service. His experience also included the positions of district ranger and assistant to the supervisor of Lolo National Forest in Montana.

While a member of the staff at New York State College, he was granted a leave in 1930 to serve on the staff of the Montana State University forestry school as professor for one year. He also is a former Kansas State College faculty member. He is ranked as one of the outstanding authorities on the planting, care, and development of farmstead windbreaks and field shelterbelts in the Great Plains area.

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Miles Named Willapa Forester

John G. Miles has been appointed forester for the Willapa branch of the Weyerhaeuser Timber Company, it was announced during September by David M. Fisher, manager of the firm's Willapa operation.

Miles is a forestry graduate from the University of Minnesota, class of 1940. He will be charged with the management of the company's forest lands in the Willapa Harbor area.

He comes to the Harbor from Centrailia, where he was a member of Weyerhaeuser's forest management research staff. He has been with Weyerhaeuser since 1942.

Lufburrow Moves Office

B. M. Lufburrow, executive secretary of the Georgia Forestry Association, has moved his office from Savannah to Atlanta, Ga. to permit closer contact and greater cooperation between the Association, the Georgia Forestry Commission, the U. S. Forest Service and other public and private conservation agencies.

Paul Bunyan Tells of Exploits

Paul Bunyan, by any comparison, was a huge and powerful lumberjack, but no one ever recorded his precise measurements. However, the Paul Bunyan animated figure displayed at the recent Railroad Fair in Chicago by the Chicago and North Western Railway is known to have required a size 42 cap, size 69 boots with caulks as large as railroad spikes, pants with a 150-inch waist, and a shirt with a size 80 neck.

Visitors to the display could converse with Paul, and he would reply with lip and eye movements synchronized to his speech. Arm and head movements were also possible.

Paul Bunyan was chosen as the central figure for the display because he typifies the size and spirit of the area served by the Northwestern lines and calls attention to the importance of forest products to railroads.

Prisoners Do Forestry Work

Constructive and useful work performed by prison inmates doing reforestation and park improvement in Michigan aids in the prisoner's rehabilitation, according to State Senator John B. Martin, Jr. of Grand Rapids who addressed the National Conference of State Parks in Detroit on September 19.

Four prison camps are now engaged in reconstructing the forest and recreation areas in Michigan.

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Teachers Study Forestry

Forestry received its share of attention in the 1949 summer term of Texas colleges. At the request of thirteen colleges, Everett F. Evans, School Specialist of the Texas Forest Service, visited the respective campuses as consultant in Forestry and resource-use education. In cooperation with other conservation organizations, instruction was given in methods and materials for teaching forestry in the regular school courses. Requests for consultant service have grown steadily since 1946, when teacher groups in five colleges heard lectures on forestry education materials and methods.

George S. James Promoted

George S. James has been promoted from supervisor of the Klamath National Forest in California to assistant regional forester as special administrative assistant on assignments at large in the California Region of the U. S. Forest Service.

Michigan State Expands Plant

Additional facilities for the over 600 forestry students at Michigan State College are available this term, according to Paul A. Herbert, professor of forestry. A professional staff of 27 men provide instruction in six fields—forest management for wildlife production, forest management for wood production, recreational and municipal forestry, technology and utilization, light construction and lumber merchandising, and a one-year forest practice course.

The old entomology building now houses the lumber merchandising and recreational forestry work, and a new Mead building houses the wood technology, wood preservation, dry kiln, and wood-working equipment. A new $20,000 instructional sawmill building will soon be completed. New quarters, mess hall, and bathhouse will be available next year at the Dunbar Forest summer camp.

In addition to its instructional activity, the forestry department of the College operates two forest nurseries and has three organized demonstration forests with resident professional foresters in charge.

Ryan Assists New Zealanders

Walter J. Ryan in September took a temporary consulting engineering assignment with the government of New Zealand. He will assist the director of forestry there in making transportation plans in connection with a large timber development program. The project involves the construction of a large sawmill, a new port, and rail and truck roads.

Mr. Ryan retired two years ago as chief engineer of the logging department of Weyerhaeuser Timber Company, Tacoma, Wash.

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Southern Pine Wage Survey Shows Average 69 Cent Rate

Employees of 448 Southern Pine operations were earning an average wage at mid-year, 1949, of slightly more than 69 cents an hour, according to a survey by the Southern Pine Association.

Forty-six hours was found to be the average work-week for logging crews, while 44 hours was the average number worked a week by sawmill and planing mill employees.

Band sawyers, with an average of $1.39 and circular sawyers with $1.11 an hour, were found to be the highest paid employees of the 448 mills.

Of the reporting mills 72 reported they provide paid vacations, while 303 did not, the report shows.

Budworm Campaign Planned

Plans for next year's spruce budworm control battle in Oregon are being worked out by a sub-committee appointed at a meeting of lumbermen and state and federal forestry officials held in Portland on September 8.

The sub-committee consists of John B. Woods, Jr. and Richard Berry of the Oregon state forestry office; R. L. Furniss, U. S. Bureau of Entomology; E. L. Kolbe, Western Pine Association; William Hagenstein, West Coast Lumbermen's Association; Stuart Moir, Western Forestry and Conservation Association; Paul Sanders, Willamette Valley Tree Farms; L. T. Webster, Washington state forestry office; Lou Alexander, Bureau of Land Management; Floyd Phillips, U. S. Indian Service; and A. J. Janicke, U. S. Forest Service.

Over 200,000 acres of timberland were sprayed with DDT this year, with a 97 percent bug kill.

The sub-committee hopes to develop plans for spraying the remaining 2,232,250 acres in Oregon and Washington.

Logging Engineer Named

William E. Bates has been selected to fill the position of chief logging engineer of the Pacific Northwest region of the U. S. Forest Service.

Bates, a 1934 graduate in forest managment from the University of Washington, is to fill the position vacated by the retirement of Newell L. Wright.

Tribbett Joins BLM Staff

Vance A. Tribbett of Billings, Mont. has been appointed chief, Branch of Forest Protection in the Bureau of Land Management's Division of Forestry.

"Resource protection, a part of this agency's timber and range resource management program, is an important conservation job of the Bureau of Land Management, resulting in the savings of millions of dollars each year." Director Marion Clawson explained.

Under Congressional authorization, the Bureau is responsible for the management of the timber, forage, mineral and other resources on approximately 171 million acres of public domain in the United States and for some 225 million acres of public land in Alaska.

Mr. Tribbett will direct public domain forest and range protection activities, including fire prevention and presuppression, and insect and disease control.

He transferred from the Bureau of Indian Affairs where he was range examiner for two years on the Missouri River Basin investigations staff. Prior to that he served with the Bureau of Indian Affairs as assistant regional forester, and as range supervisor with headquarters in Billings, Mont. and Rosebud, S. D. He was in charge of the fire protection organization on the two-million-acre Rosebud Indian Reservation in South Dakota. In Montana he also participated in fire prevention work and assisted in reviewing Indian reservation fire plans.

Other experience includes several years as range examiner with the Soil Conservation Service at Rapid City, S. D.

He was graduated in forestry at Iowa State College, Ames, in 1936.

Idaho Adds Range Instructor

Lee Sharp has been appointed to assist Dr. E. W. Tisdale in giving instruction and doing research in range management at the School of Forestry, University of Idaho, Moscow.

Mr. Sharp recently received his master's degree from the School of Forest, Range, and Wildlife Management, Utah State Agricultural College.

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ECA Approves Reforestation

Reforestation programs will be financed in Italy with 5 billion lire (about $8,695,000) from the Italian counterpart fund, the Economic Cooperation Administration announced in August in Washington and Rome.

The money will be spent to help restore Italy's war-damaged forests, to increase timber and timber byproducts production, and to establish forestry training courses, ECA said. Under the program, 60,000 jobless Italians will be trained and employed in 740 reforestation centers throughout the country.

The lire counterpart fund is accumulated by the Italian Government in amounts equal to U. S. dollar grants as Italians pay in their own currency for Marshall Plan goods. Use of the fund for rebuilding war-damaged industries and transportation systems, improving farm lands, providing vocational training, and helping in similar recovery projects in Italy is approved by ECA.

Hubert Fights Blight at Idaho

Dr. Ernest E. Hubert, one of the nation's authorities on forest pathology, has returned to the University of Idaho to help in the scientific war against the blight which is killing many young white pine trees in the state.

From 1925 to 1935, he was a professor in the school of forestry at the University of Idaho, serving as acting dean of this school and the graduate school in 1933-34. He left the university in 1935 to become research technologist of the Western Pine Association laboratory at Portland, remaining there until 1942. From that year to 1949, he was chief pathologist and wood technologist of the Monsanto Chemical Company, Seattle.

Briton Studies Kiln Methods

W. C. Stevens, of Great Britian's Forest Products Research Laboratory in the Department of Scientific and Industrial Research, is currently spending several months in the United States and Canada studying the operation of American-type dry kilns.

This is the first of a series of technical assistance projects planned in cooperation with the Economic Cooperation Administration.

The British government is seeking to avoid timber waste by learning the best methods of wood seasoning.

Pine Seed Packets Distributed

Ten thousand packets of pine seed, complete with planting instructions, were distributed to those attending the Louisiana State Forest Festival held at Winnfield on September 21-24 in connection with the Winn Parish Fair.

Featured attractions were log and pulpwood cutting contests, fire prevention and forest management exhibits, and a beauty contest.

McNutt Transfers to Angeles

Jack J. McNutt, former associate executive secretary of the Society of American Foresters, became assistant supervisor of the Angeles National Forest in California on September 18. He transferred from the Shasta National Forest to the new position.

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Forester Exam Announced

Closing date for filing applications to take the federal Junior Agricultural Assistant examination which was announced on October 11 is November 8.

Other positions to be filled besides that of forester include agricultural economist, agricultural engineer, agronomist, animal husbandman, fishery biologist, botanist, entomologist, geneticist, home economist, horticulturist, plant pathologist, plant physiologist, plant quarantine inspector, poultry husbandman, statistician, wildlife biologist, and zoologist (parasitology).

Entrance salary is $2,974 a year.

Application cards to file with the U. S. Civil Service Commission may be obtained at post offices.

Protection Trends Described

Winners of the Western Forestry and Conservation Association's annual essay contest for junior and senior forestry students in the six accredited forestry schools in California, Idaho, Montana, Oregon, Washington, and British Columbia will be announced at the association's meeting in December.

Judges are Thornton T. Munger, E. T. Clark, and E. L. Kolbe. Essays this year dealt with significant trends and developments in forest fire protection, according to Stuart Moir, forest counsel for the association.

Reforestation Arboriculture

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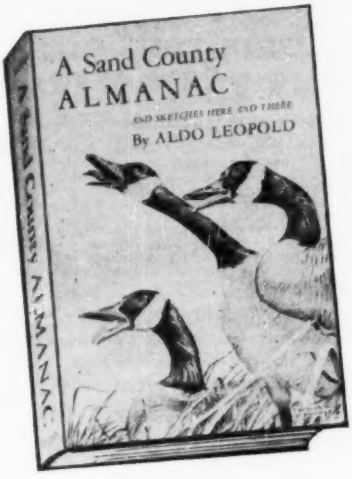
Company Foresters Meet

Ninety foresters of the Southern Kraft Division of International Paper Co. met at Fort Morgan, Ala. on September 20 to 22.

The meeting was called by Earl Porter, manager of the company's woodlands department, for discussion of general woodland policies and exchange of ideas.

Chief among subjects of discussion was the company's overall conservation program to aid private landowners.

The best writings of a famous forester and conservationist



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FOREST MENSURATION

By HERMAN H. CHAPMAN and WALTER H. MEYER, Yale School of Forestry, *American Forestry Series*. 522 pages, $5.00

A practical text for forestry students and a field manual for foresters, dealing with the measurements of trees and timber, and of harvested lumber and other products. The material is entirely up to date and the authors deal first with forest products, tracing from cause to effect; the next step is to study the individual logs or bolts; then a combination of their contents into volume tables for average trees by diameter, height, and form classes. Each chapter contains a list of selected references to published and accessible material on the subject discussed.

FOREST VALUATION

By HERMAN H. CHAPMAN and WALTER H. MEYER. *American Forestry Series*. 497 pages, $6.00

This comprehensive work gives particular emphasis to the application of basic economic principles to forest economics and valuation. Stress is placed on discount, market values, and detailed analysis of grade composition and value of standing timber. Several sections are devoted to subjects such as the organization of private enterprise and the source and origin of economic values. Value is shown to be dependent on utility of services, as determined by market price.

FARM WOOD CROPS

By JOHN F. PRESTON, formerly chief of Forestry Division, Soil Conservation Service, U. S. Department of Agriculture, Washington, D. C. *American Forestry Series*. 304 pages, $3.75

A textbook for usual courses in farm forestry in colleges of agriculture. Employs a direct and practical approach and does not treat dendrology and silviculture from an academic point of view. It is a technical guide to the development of a farm woodland enterprise integrated with the farm business. It presents the farm economic angles of forestry and the forestry techniques needed in the initial stages of woods management. It shows why the farmer should grow wood as a farm crop, and, after he has decided to do it, how to take the first steps in farm woodland management.

HARVESTING TIMBER CROPS

By A. E. WACKERMAN, Duke University. *American Forestry Series*. 437 pages, $5.00

Covers all phases of harvesting, from preliminary considerations, involved in planning and preparing for the actual harvesting steps, to cost controls and records. The final chapter, devoted to regional harvesting practices, was prepared by seven contributors, each an expert in his region. The subject of timber harvesting is treated as an integral part of forestry, rather than as an independent procedure. The author covers the harvesting of all important forest products such as saw logs, pulpwood, poles, ties, and veneer blocks. Throughout, the treatment is more analytical than descriptive. The illustrations are outstanding.

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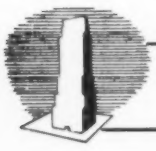

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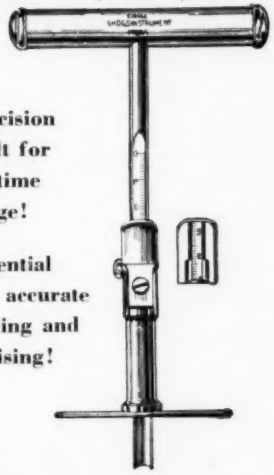

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